

AD-A174 982

DFVLR/FAA (DEUTSCHE FORSCHUNGS-UND VERSUCHSANSTALT FUER 1/3

LUFT UND RAUMFAHR (U) DEUTSCHE FORSCHUNGS- UND

VERSUCHSANSTALT FUER LUFT- UND RAUMF

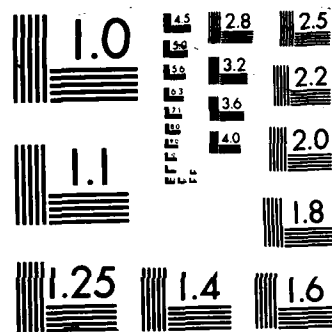
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W M DOBRZYNSKI ET AL 1986

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MICROCOPY RESOLUTION TEST CHART

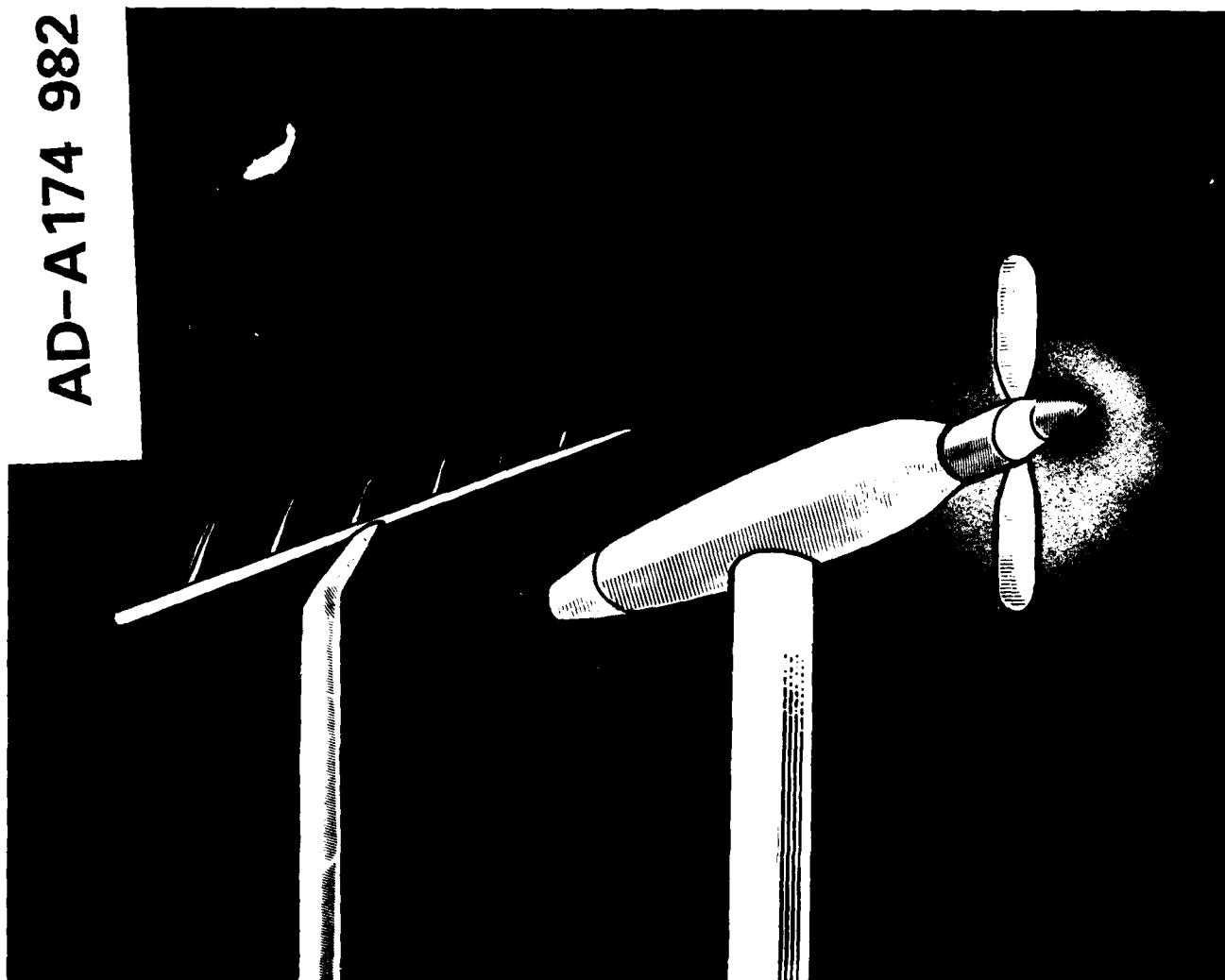
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# DFVLR/FAA Propeller Noise Tests in the German-Dutch Wind Tunnel DNW

Appendix VI: The Effect of Engine-cowling Installation.

DFVLR-IB 129-86/3  
FAA Report No. AEE 86-3

AD-A174 982



Jointly conducted by:



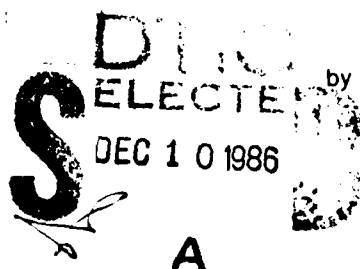
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Deutsche Forschungs-und  
Versuchsanstalt für  
Luft-und Raumfahrt e.V.

Inst. für Entwurfsaerodynamik  
Abteilung Technische Akustik



by Werner M. Dobrzynski  
Hanno H. Heller  
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James E. Densmore

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DATA REPORT ON PROPELLER NOISE TESTS  
IN THE GERMAN-DUTCH WIND TUNNEL

APPENDIX VI

TEST RESULTS ON THE EFFECT  
OF ENGINE-COWLING INSTALLATION

by

W. Dobrzynski\*, H. Heller\*  
and  
J. Powers\*\*, J. Densmore\*\*

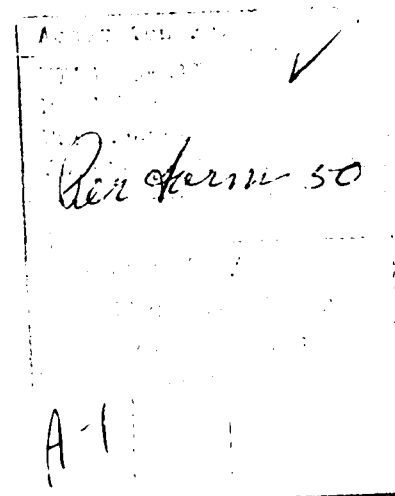
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\*\* FAA, 800 Independence Ave., S.W., Washington, D.C. 20591, USA



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2. Microphone Array
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7. Comments on Data Interpretation



## 1. Introduction

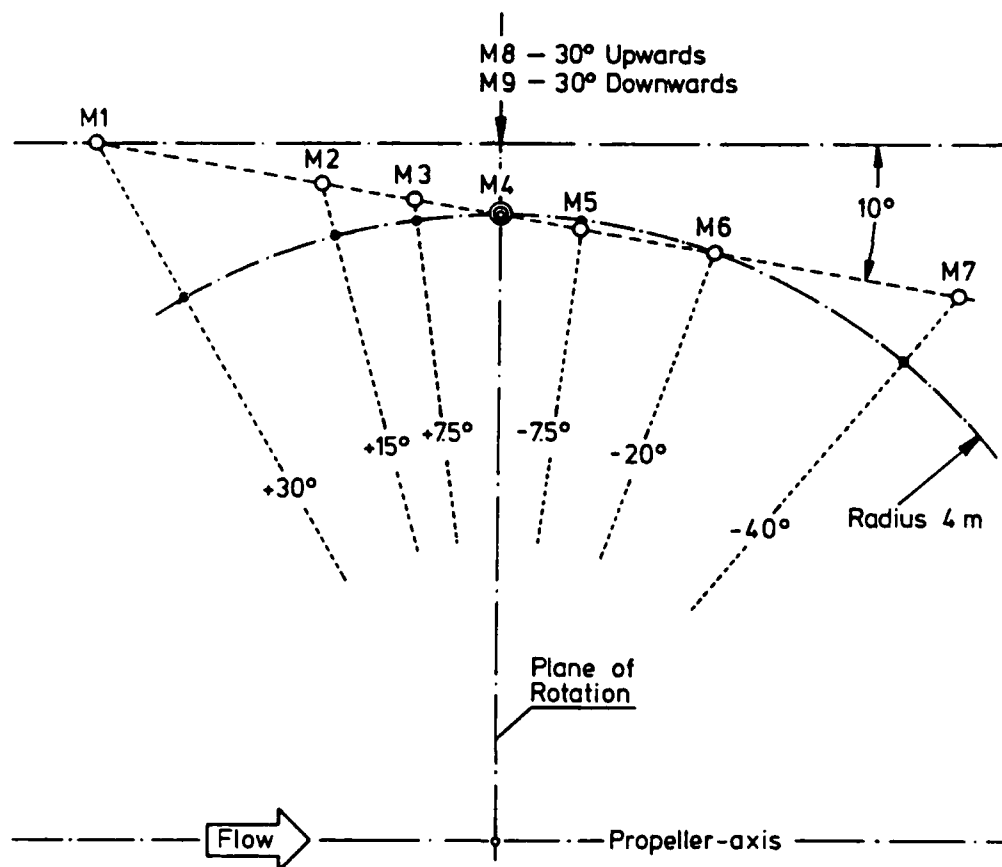
Within a joint effort (and supported by the German Ministry of Research and Technology/BMFT) between the Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt (DFVLR), the US Federal Aviation Administration (FAA), and the German Ministry of Transportation (BMV), propeller noise tests were conducted in the "Deutsch-Niederländischer Windkanal/German Dutch Wind Tunnel (DNW)" to develop high quality propeller-acoustics data, which could be used by manufacturers for acoustic design purposes, and by researchers to validate established or newly developed theoretical noise prediction methods.

Specifically, the program addressed propeller Mach-number and disc-plane attitude effects as related to noise certification test and evaluation procedures. Changes in Mach-number, as they affect acoustic data adjustments, were explored through independent variation of tunnel flow velocity, propeller rotational speed and ambient air temperature. The tests on the effect of in-flow angle on propeller noise also incorporated the influence of a typical engine nacelle on the flow field and, hence, on the propeller noise.

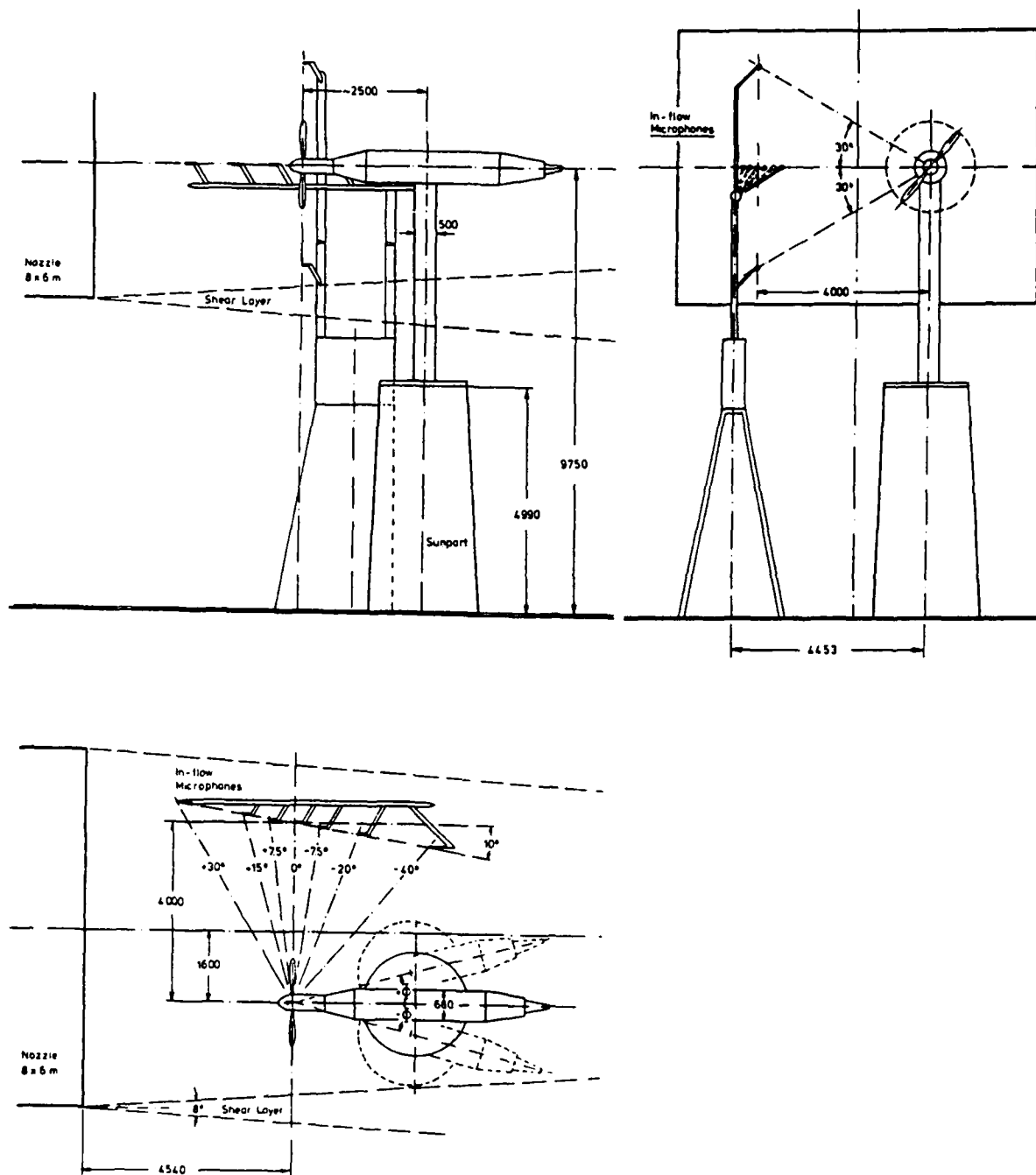
> In this Appendix the test results on the effect of engine-cowling installation are documented in terms of pressure-time histories, narrow-band spectra and unweighted as well as A-weighted overall sound pressure levels, together with supplementary information necessary for further data interpretation. A detailed description of data-acquisition and -reduction techniques is provided by the "Executive Report" to this Appendix.

## 2. Microphone Array

A total of seven in-flow microphones were positioned in the horizontal plane at different streamwise locations corresponding to particular geometric radiation angles from the propeller center. Two additional microphones were positioned in the plane of rotation (4 m lateral distance to the propeller axis) at angles of  $\pm 30$  deg respectively above and below the horizontal plane with reference to the propeller center.



In-flow Microphone Positioning



Schematic Representation of Test-rig Arrangement within the Core-flow Regime of the DNW 8x6m<sup>2</sup> Open Test Section

### 3. Environmental and Operational Test-data

In the following table(s) the data-point matrix is documented. These table(s) summarise the as-measured data and characteristic propeller operational parameters as calculated from measured data.

RUN NO.	DATA POINT	PITCH ANGLE		ROT. SPEED	FLOW VEL.		POWER KW	THRUST		ATTITUDE ANGLE		FLOW TEMP. KELVIN	FLOW PRES. PASCAL	FLOW DENS. KG/CM	ADV. RATIO	ATTACK ANGLE DEG	POWER COEF.	THRUST COEF.	HEL. MACHN.
		DEG	DEG	RPM	M/S	M/S	KW	NEWTON	NEWTON	DEG	DEG	KELVIN	PASCAL	KG/CM	-	DEG	-	-	-
179	FNC-7	19.9	19.9	2100.	51.5	51.5	103.6	1760.	1760.	0.0	0.0	287.5	99082.	1.198	0.2305	2.816	0.0582	0.0704	0.6745
180	FNC-8	19.9	19.9	2400.	51.8	51.8	181.5	2864.	2864.	0.0	0.0	287.9	99083.	1.196	0.2029	4.765	0.0685	0.0878	0.7659
181	FNC-9	19.9	19.9	2700.	77.1	77.1	174.7	2045.	2045.	0.0	0.0	288.5	99151.	1.194	0.2684	0.210	0.0464	0.0496	0.8734
182	FNC-10	23.7	23.7	1800.	51.2	51.2	85.8	1486.	1486.	0.0	0.0	287.6	99161.	1.198	0.2673	4.081	0.0766	0.0808	0.5831
183	FNC-11	23.7	23.7	2100.	51.6	51.6	160.8	2540.	2540.	0.0	0.0	288.1	99175.	1.196	0.2309	6.585	0.0905	0.1017	0.6739
184	FNC-12	23.7	23.7	2400.	67.2	67.2	221.4	2849.	2849.	0.0	0.0	288.7	99193.	1.194	0.2632	4.364	0.0837	0.0875	0.7751
176	FNC-1	19.9	19.9	2100.	51.5	51.5	102.3	1760.	1760.	3.6	3.6	287.0	99083.	1.200	0.2305	2.816	0.0574	0.0702	0.6751
177	FNC-2	19.9	19.9	2400.	51.6	51.6	180.0	2893.	2893.	3.6	3.6	287.7	99103.	1.197	0.2021	4.821	0.0678	0.0886	0.7661
178	FNC-3	19.9	19.9	2700.	77.4	77.4	176.4	2079.	2079.	3.6	3.6	288.3	99112.	1.194	0.2694	0.139	0.0468	0.0504	0.8740
175	FNC-4	23.7	23.7	1800.	51.3	51.3	86.0	1510.	1510.	3.6	3.6	287.2	99143.	1.200	0.2679	4.045	0.0766	0.0820	0.5835
174	FNC-5	23.7	23.7	2100.	51.6	51.6	161.2	2599.	2599.	3.6	3.6	287.7	99134.	1.197	0.2309	6.585	0.0906	0.1039	0.6743
173	FNC-6	23.7	23.7	2400.	67.4	67.4	223.2	2893.	2893.	3.6	3.6	286.6	99157.	1.203	0.2640	4.311	0.0837	0.0882	0.7781

#### 4. Overall Noise Levels from Direct Analog Analysis

The following tables provide unweighted (OASPL) and A-weighted ( $L_A$ ) overall sound pressure levels from quick-look analog data-analysis of measured data for all data-points and microphone positions respectively. Level-numbers which are identified with an asterix are "disturbed data" and should not be interpreted.

# INSTALLATION EFFECT, ROUND-TIP PROP.

## DNW PROPELLER NOISE TEST

Run No.	Data Point	In-Flow Noise Level								
		M1	M2	M3	M4	M5	M6	M7	M8	M9
179	FNC-7 L -dB(A)	89.5	93.8	95.7	96.8	97.7	--	94.4	99.7*	98.6*
	OASPL-dB	102.4	108.1	109.7	111.6	113.1	--	111.2	113.0*	112.2
180	FNC-8 L -dB(A)	97.7	103.5	106.5	108.1	109.1	--	100.6	106.8	107.2
	OASPL-dB	108.1	112.8	115.5	118.0	119.9	--	116.2	117.2	117.5
181	FNC-9 L -dB(A)	108.9	119.4*	119.5	120.4	120.3	--	119.9*	118.6	120.0
	OASPL-dB	116.4	128.1*	123.4	124.9	127.6	--	133.0*	126.5	129.0*
182	FNC-10 L -dB(A)	87.7	89.7	90.9	93.6	94.1	--	95.5*	99.8*	95.4
	OASPL-dB	101.1	105.9*	106.5	108.4	110.3	--	110.5*	112.7*	111.4
183	FNC-11 L -dB(A)	91.6	96.3	98.4	100.1	101.0	--	97.5*	100.8*	100.3
	OASPL-dB	105.2	111.0*	112.4	114.6	116.0	--	114.7	115.1*	114.6
184	FNC-12 L -dB(A)	99.7	105.5	108.4	110.4	111.0	--	106.7*	109.1	111.2*
	OASPL-dB	111.1	116.1*	117.2	119.8	121.7	--	120.3*	120.3	121.9
176	FNC-1 L -dB(A)	90.8	96.0*	97.2	98.6	99.0	98.0	96.6*	100.5*	99.3
	OASPL-dB	104.5	110.3*	111.1	113.1	114.5	114.5	113.7*	114.1*	113.1
177	FNC-2 L -dB(A)	100.2	106.1	109.0	109.6	110.1	107.5	101.4*	107.7	108.7
	OASPL-dB	109.6	115.1	118.0	119.9	121.4	121.1	117.9*	117.9	119.1
178	FNC-3 L -dB(A)	113.1	122.5*	122.1	122.1	121.1	114.7	119.7*	120.0	121.2
	OASPL-dB	119.2	129.6*	125.3	126.8	128.3	123.9	132.9*	127.4	129.2*
175	FNC-4 L -dB(A)	88.9	91.0	91.7	93.6	95.0	94.6	95.6*	97.6*	95.9
	OASPL-dB	103.4	108.6*	108.4	109.8	111.7	111.1	111.9*	113.7*	112.1
174	FNC-5 L -dB(A)	92.8	98.0	100.0	101.2	102.2	101.2	97.7*	101.4*	102.0
	OASPL-dB	107.2	112.6*	114.3	116.0	117.6	118.0	116.7*	115.2	115.9
173	FNC-6 L -dB(A)	103.1	108.8	110.9	111.7	112.3	109.6	109.3*	110.3	112.2
	OASPL-dB	113.4	117.8	119.7	121.4	123.5	123.2	123.7*	121.0	123.1

All runs with cowling installed.

\*Higher "R" values

Linear- and A-weighted Overall Noise Levels from Analog Data-analysis



## 5. Acoustic Pressure-time Histories and Narrow-band Spectra

Acoustic data as presented in this section have been derived from a computer analysis of digitized analog tape-readings. For each data-point and microphone position respectively the data were processed and are presented in two different ways:

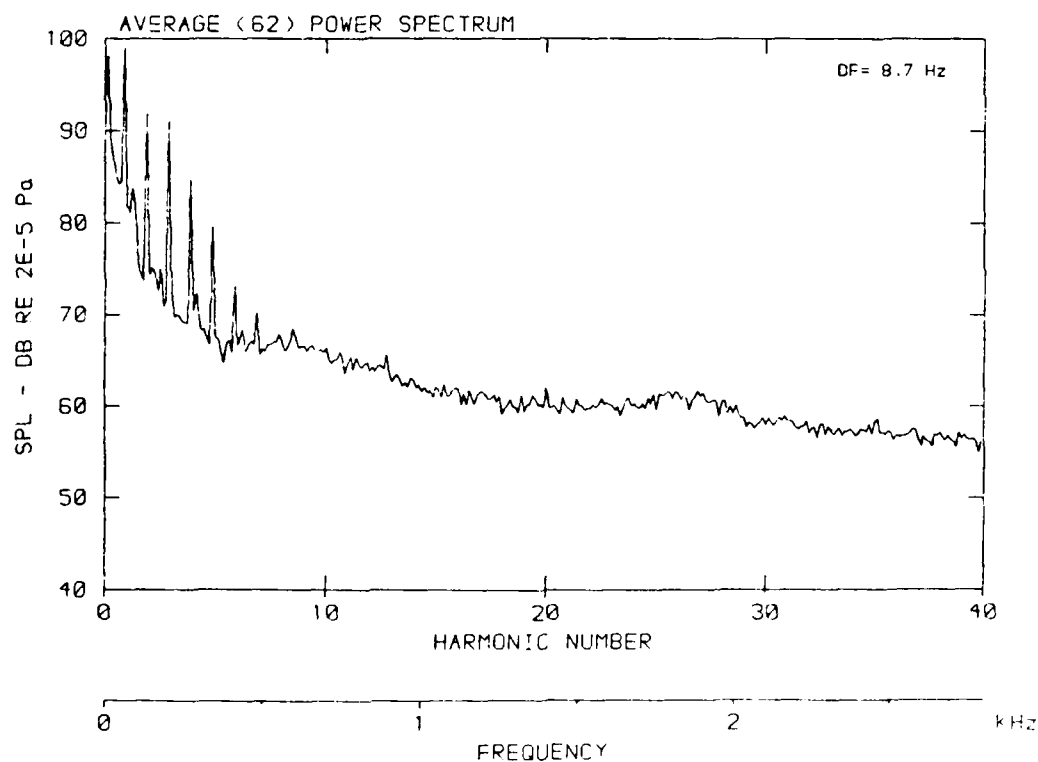
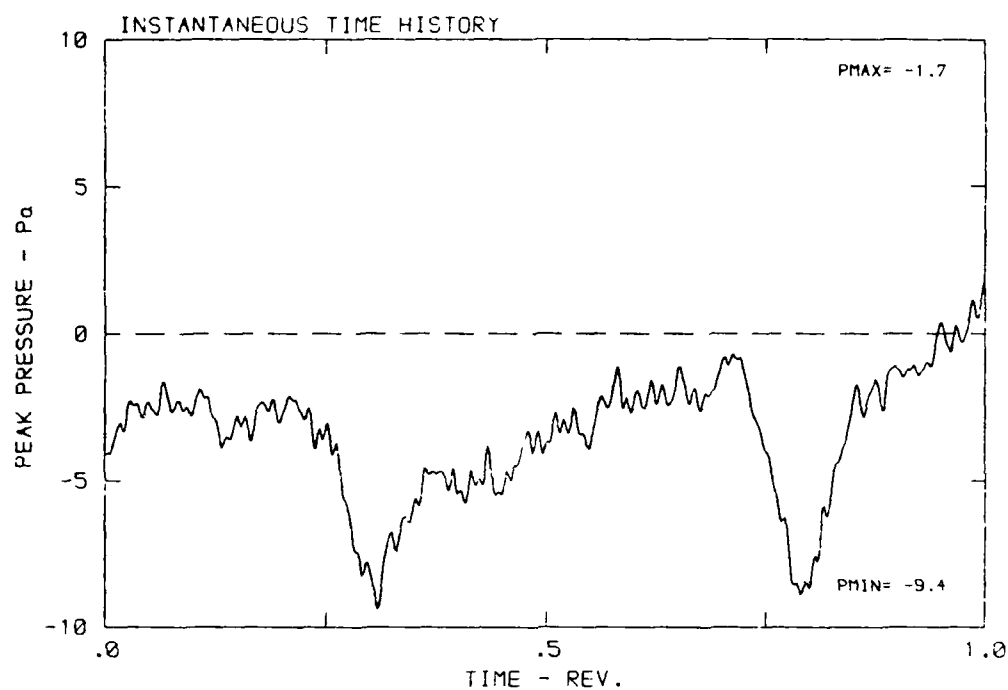
- a) A single instantaneous pressure-time history is presented and labeled "Instantaneous Time History" together with a power spectrum which had been calculated as an energy average of individual power spectra corresponding to a certain number of instantaneous pressure-time histories. This spectrum is labeled "Average (xx) Power Spectrum". The "xx" in the label denotes the number of time histories averaged in that particular spectrum.
- b) A certain number of instantaneous pressure-time histories is averaged in the time-domain and the resulting pressure averaged time-history is labeled "Average (xx) Time History". The "xx" in the label denotes the number of averaged instantaneous time-histories.

The value of  $\Delta P$  in the brackets behind this label denotes the maximum peak-to-peak pressure amplitude difference in %, when referenced to the minimum peak-to-peak pressure amplitude difference as detected in the "xx" instantaneous time histories. The magnitude of  $\Delta P$  can be taken as indicator to judge the stationarity (quality) of the respective data-record. If the value of  $\Delta P$  is in excess of 496% respective data are marked with a triple star (\*\*\*) to indicate that the data are heavily distorted.

From the pressure-averaged time-history a pressure level spectrum is calculated and labeled "Power Spectrum of Averaged Time History".

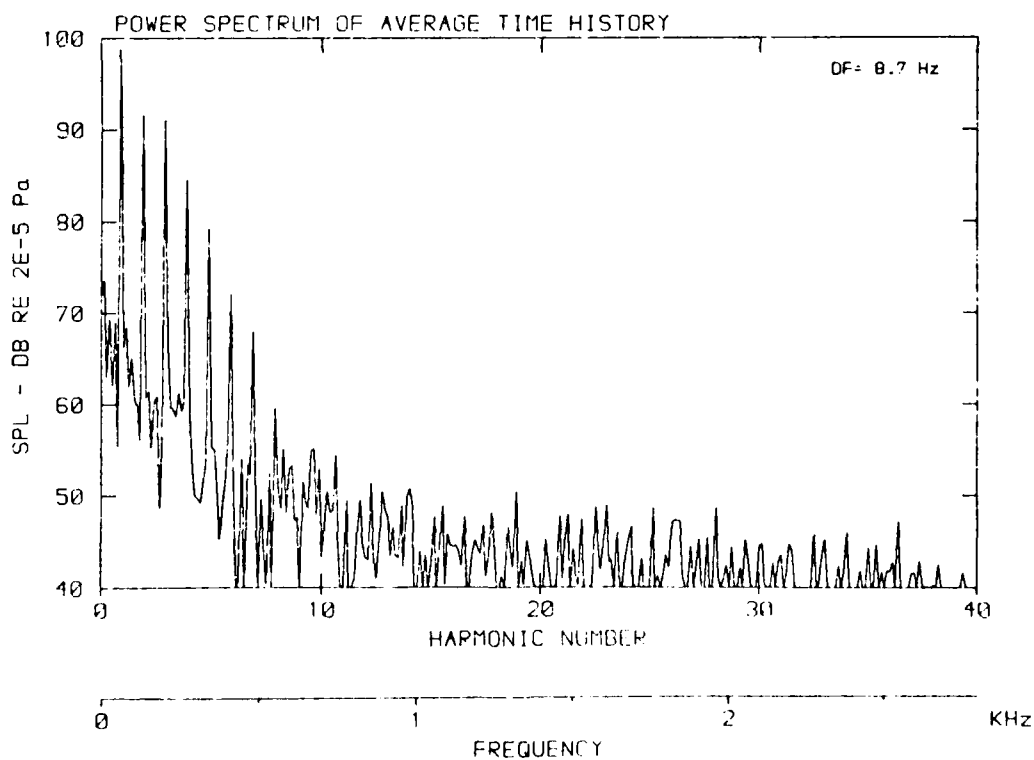
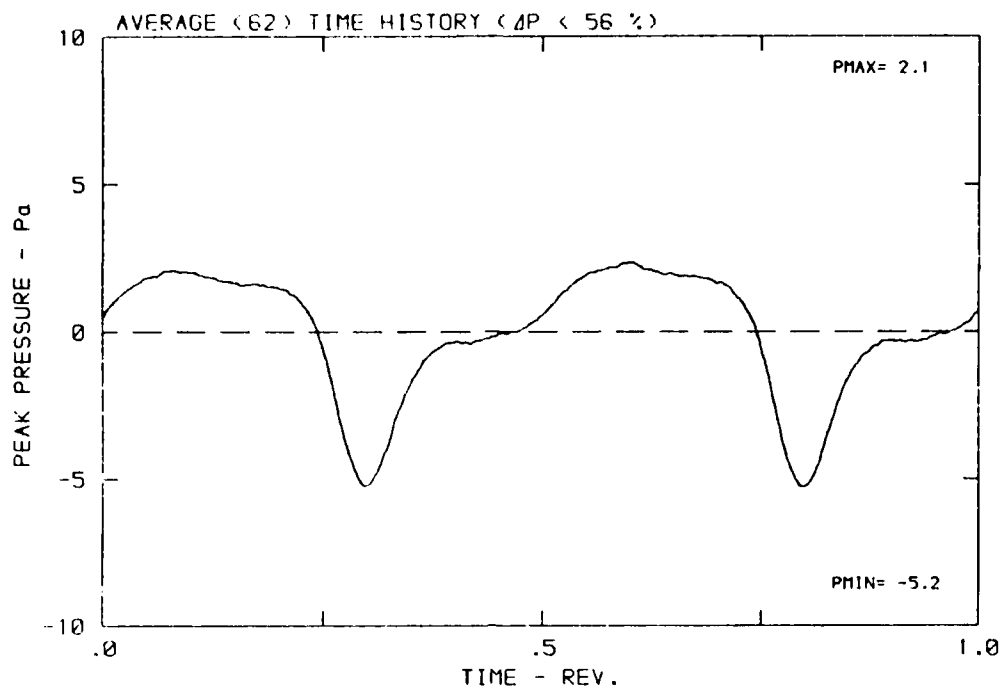
DATA POINT: FNC-7 RUN: 173 MF: 1

$\beta$ : 19.9° MH: .6745 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 287.5



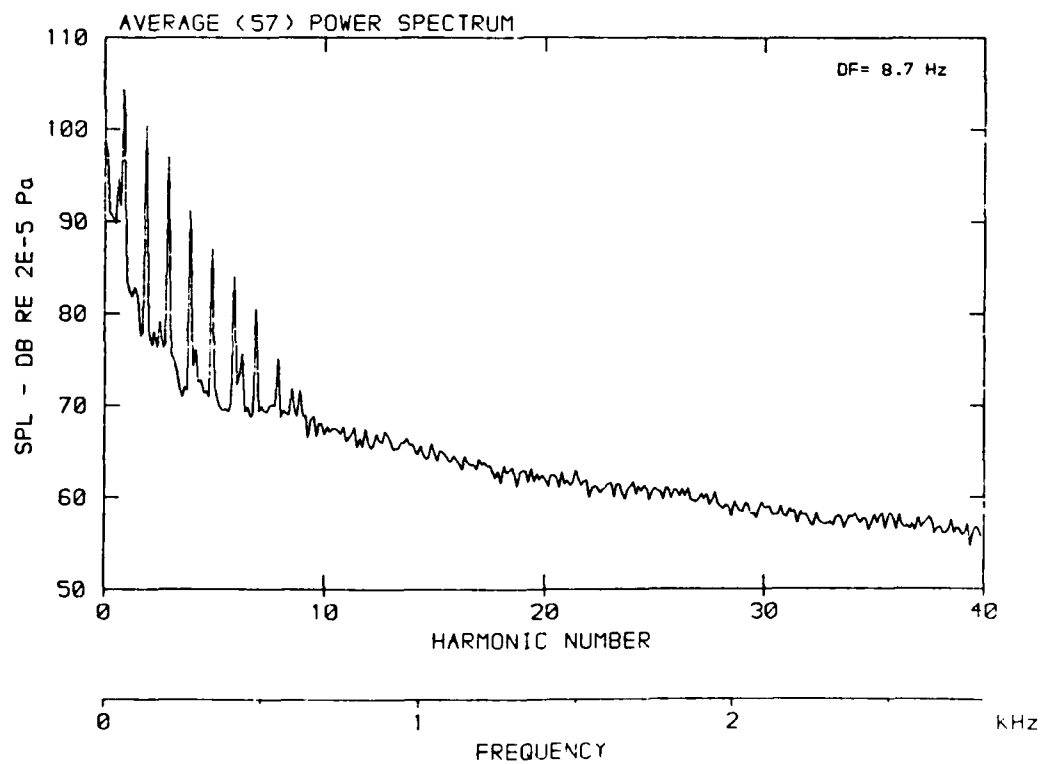
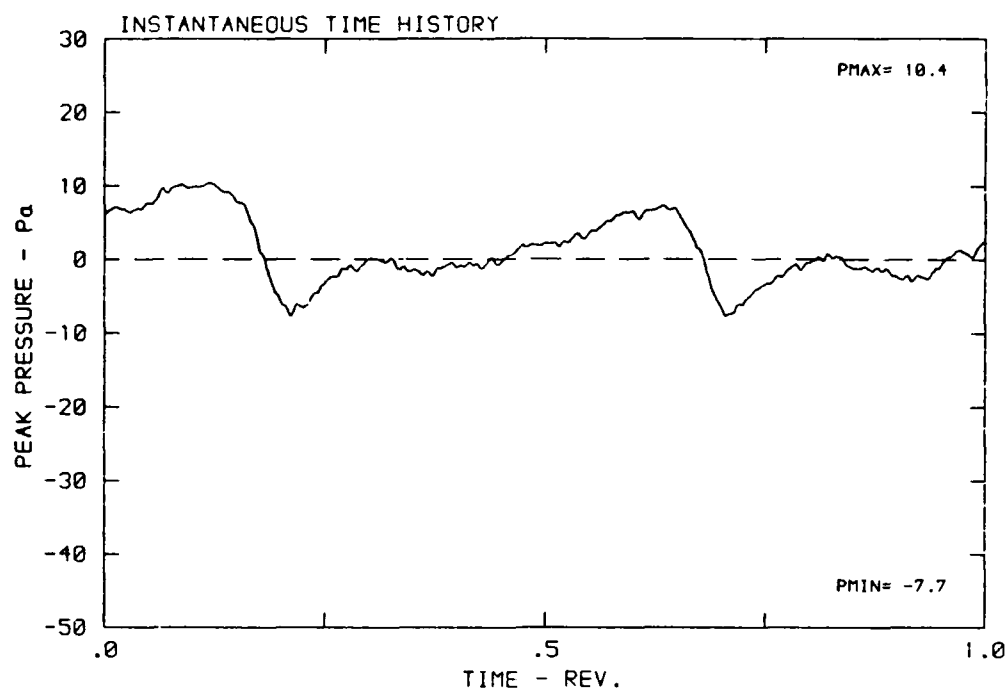
DATA POINT: FNC 7 RUN: 179 MP: 1

$\beta$ : 19.9° MH: .6745 n: 2100 rpm v/u: .231  $\phi$ : .0° T: 287.5 K



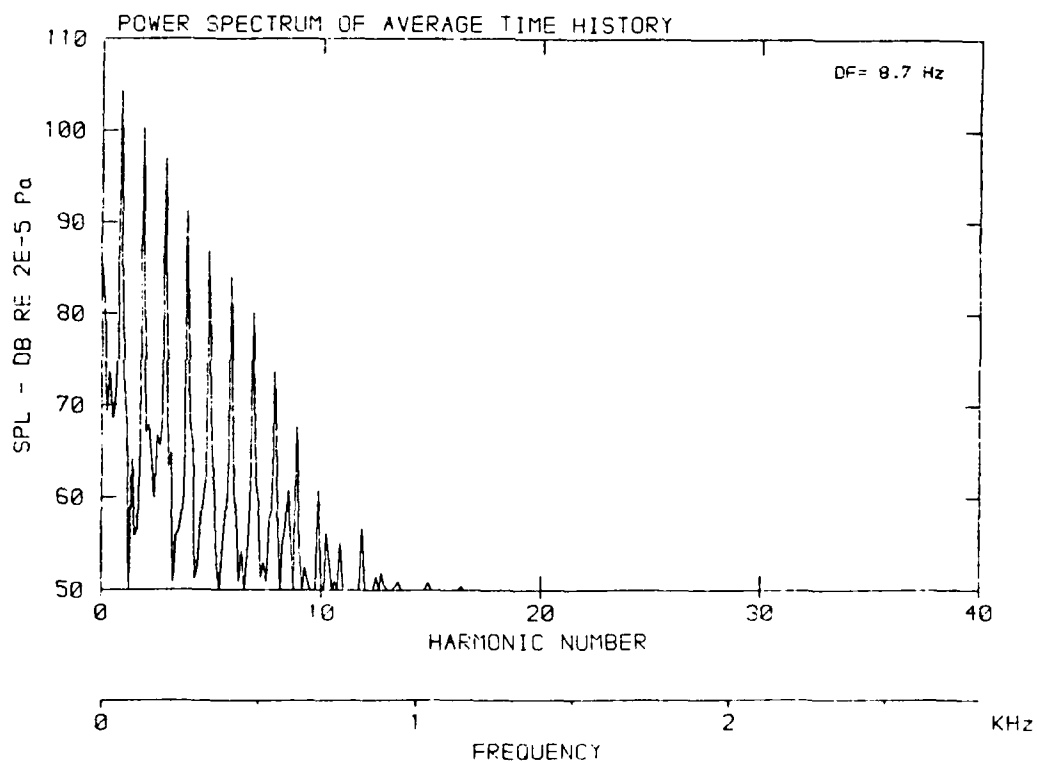
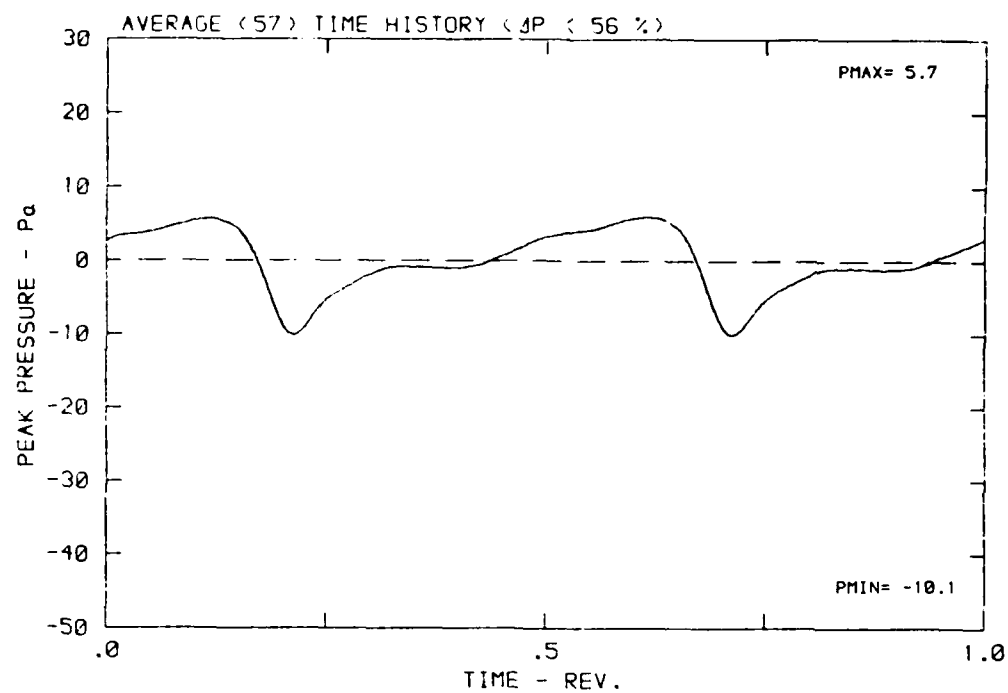
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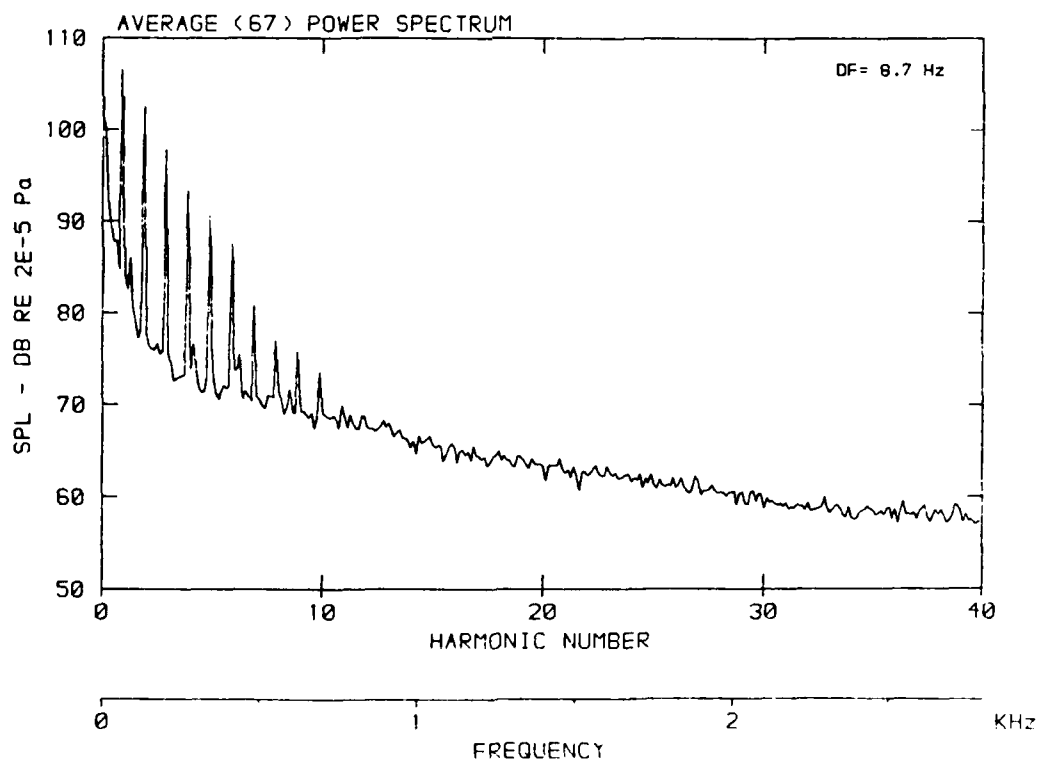
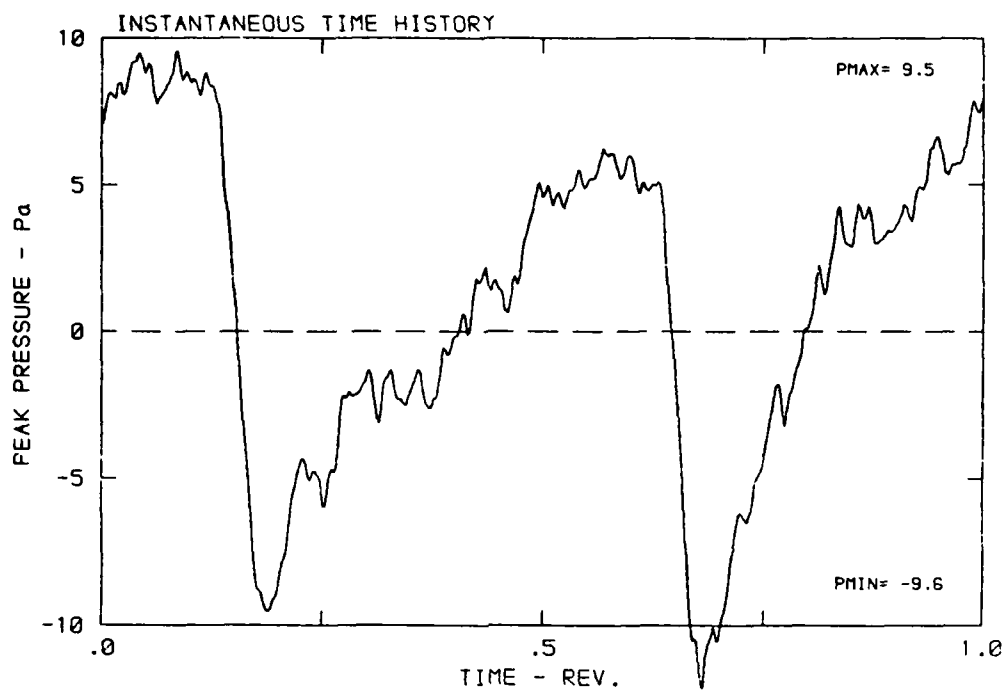
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$\beta$ : 19.9° MH: .6745 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 287.5 K



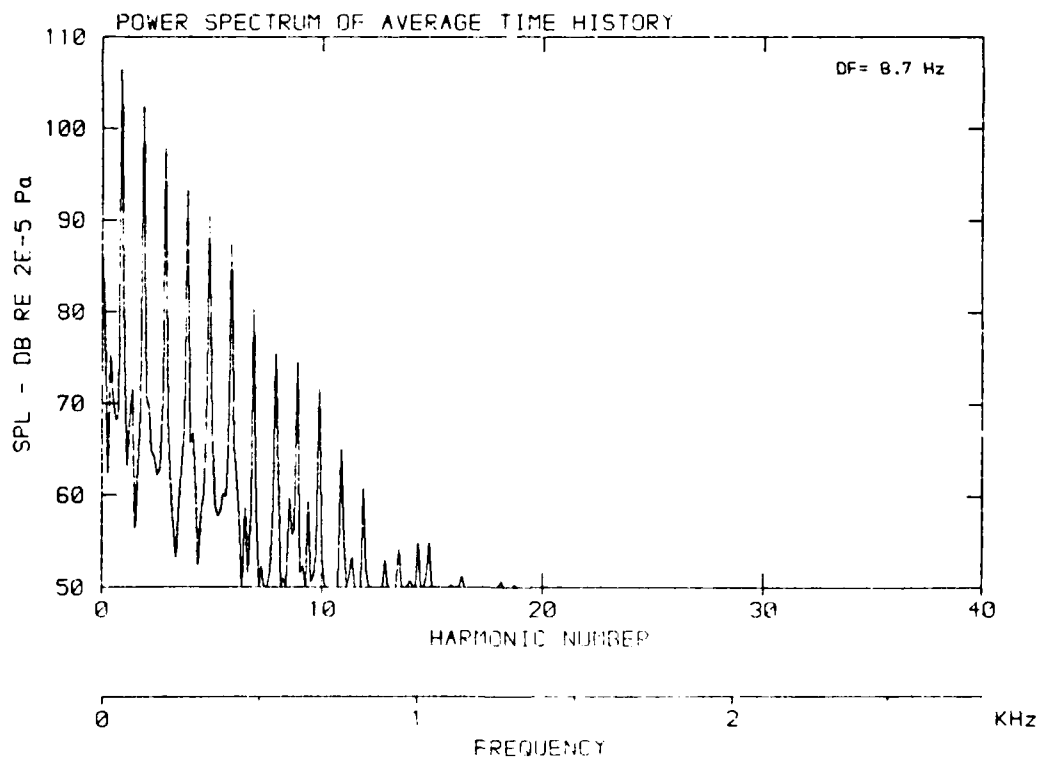
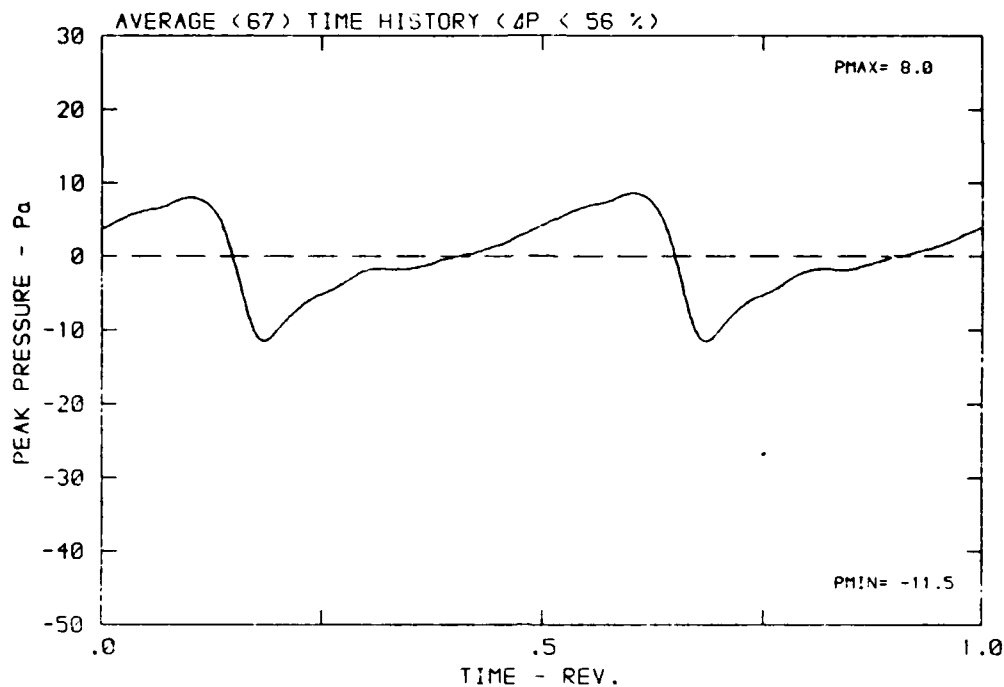
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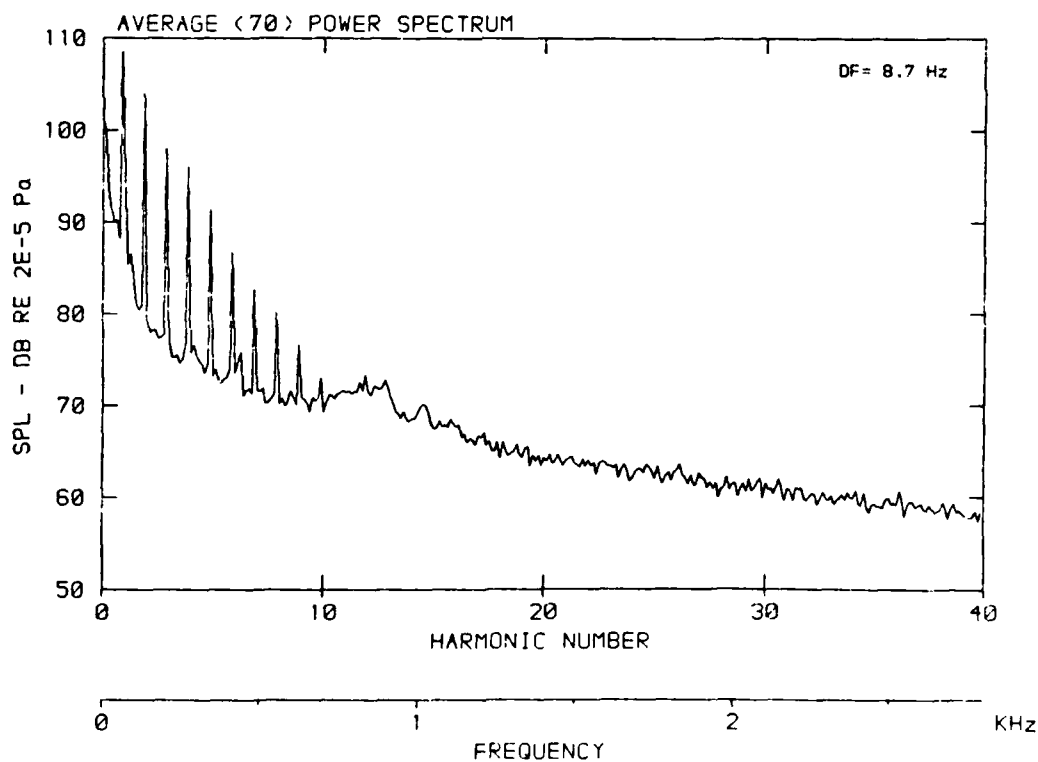
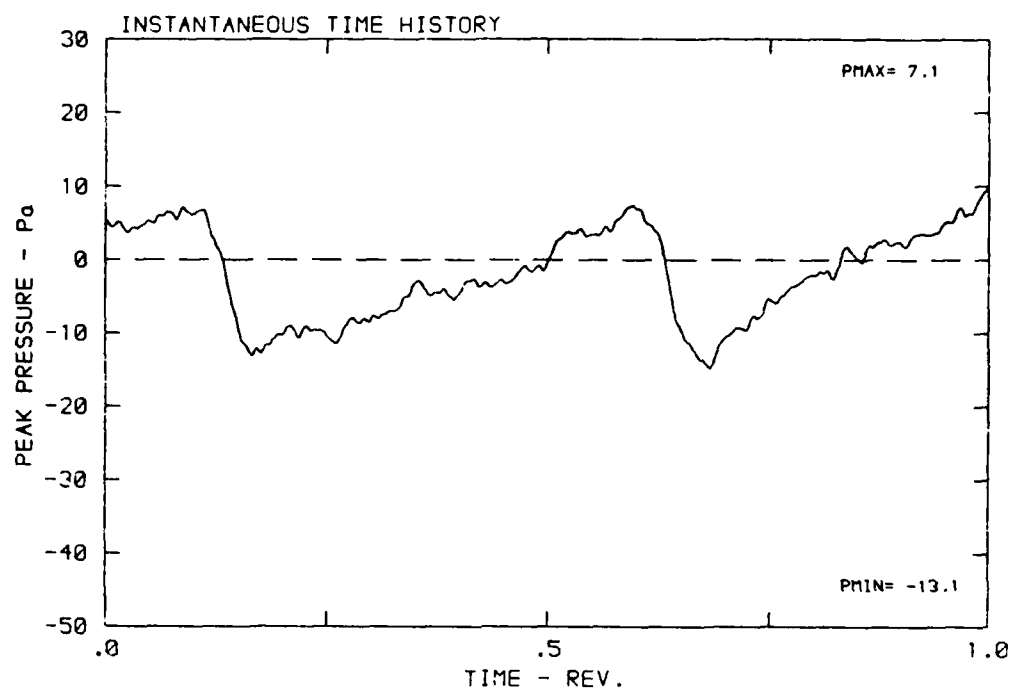
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$\beta$ : 19.9° MH: .6745 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 287.5 K



DATA POINT: FNC-7 RUN: 179 MP: 4

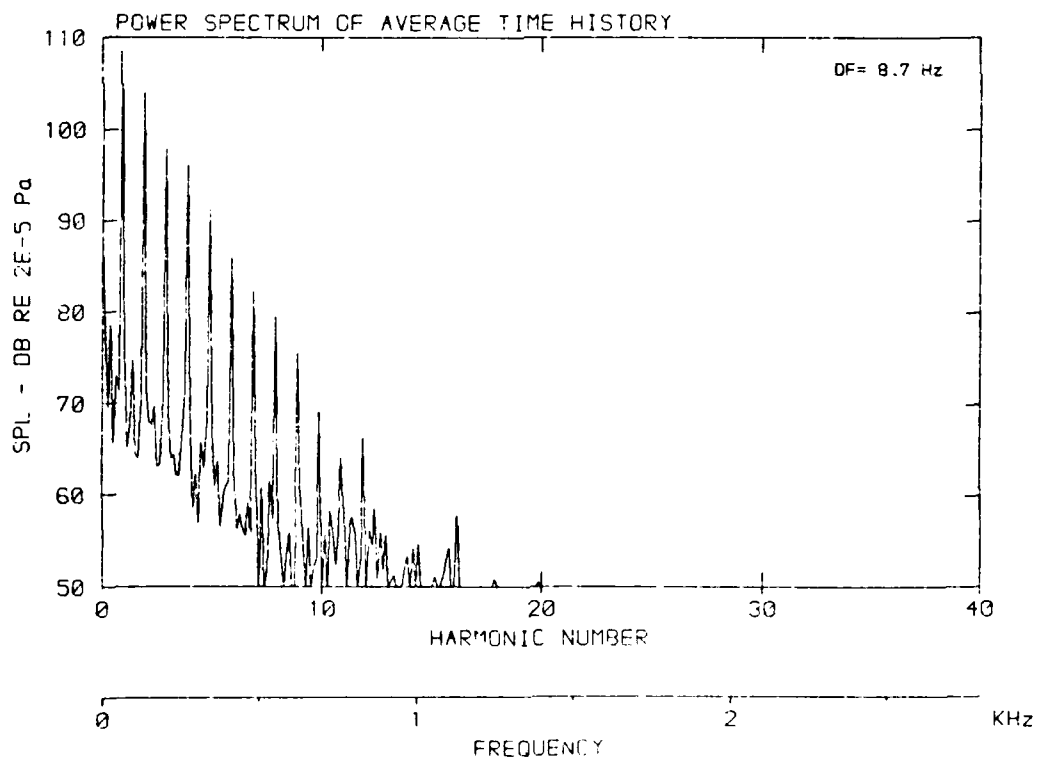
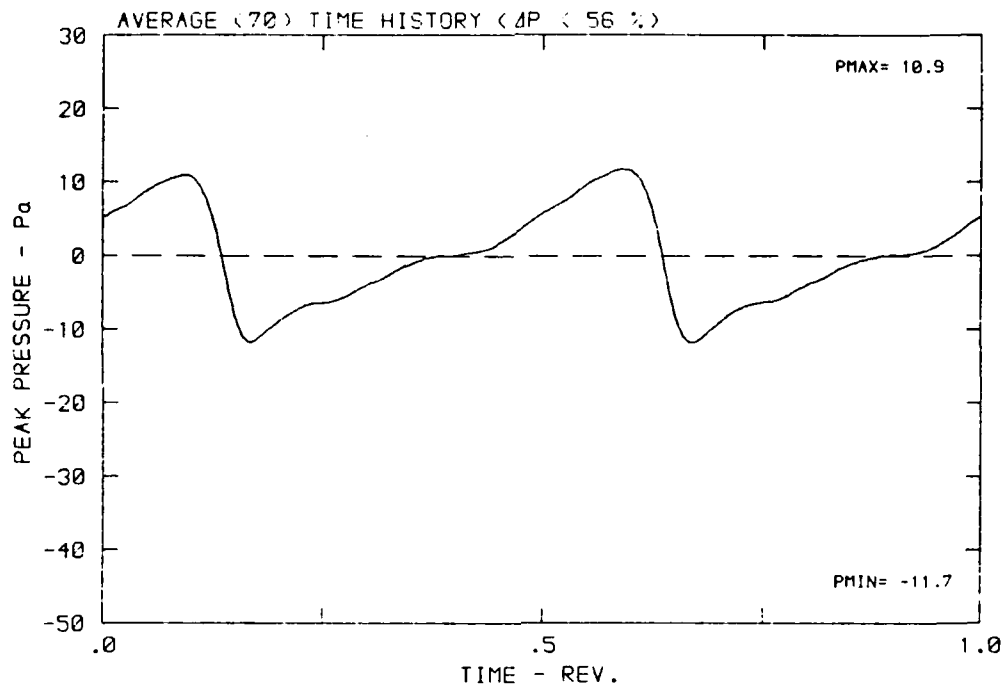
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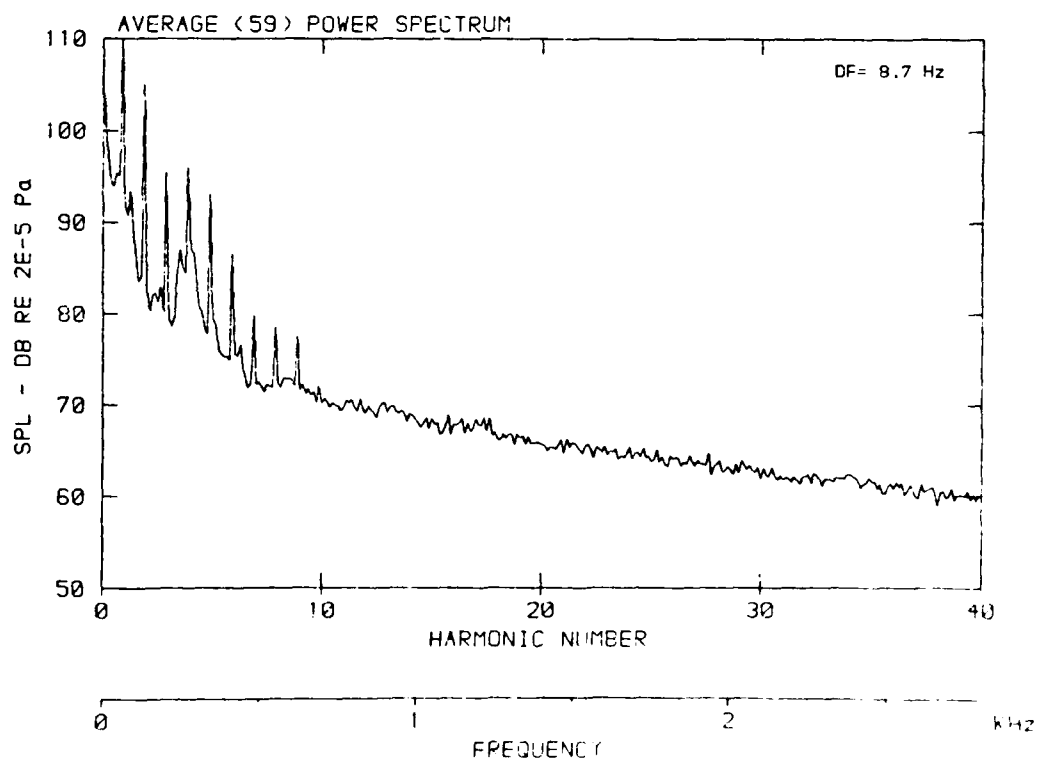
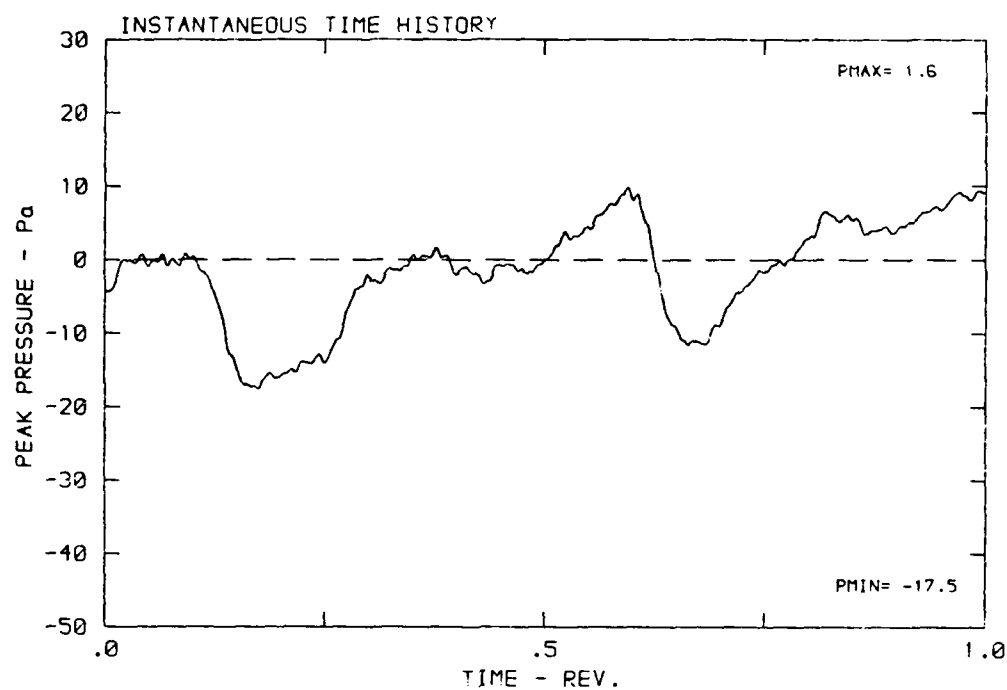
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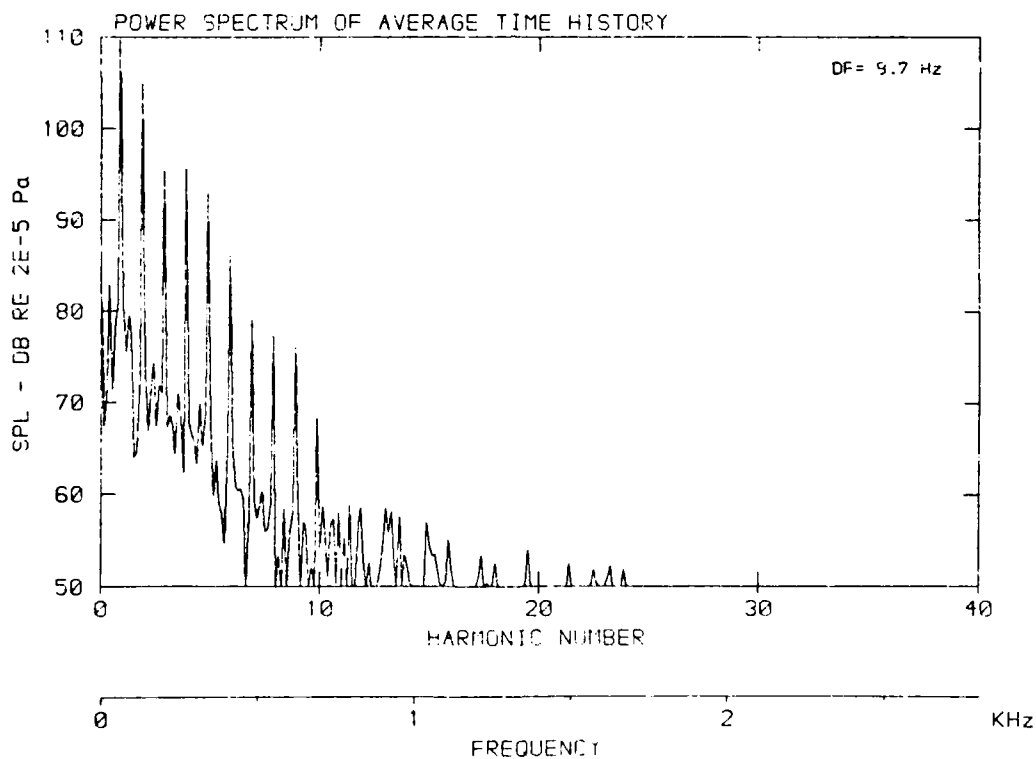
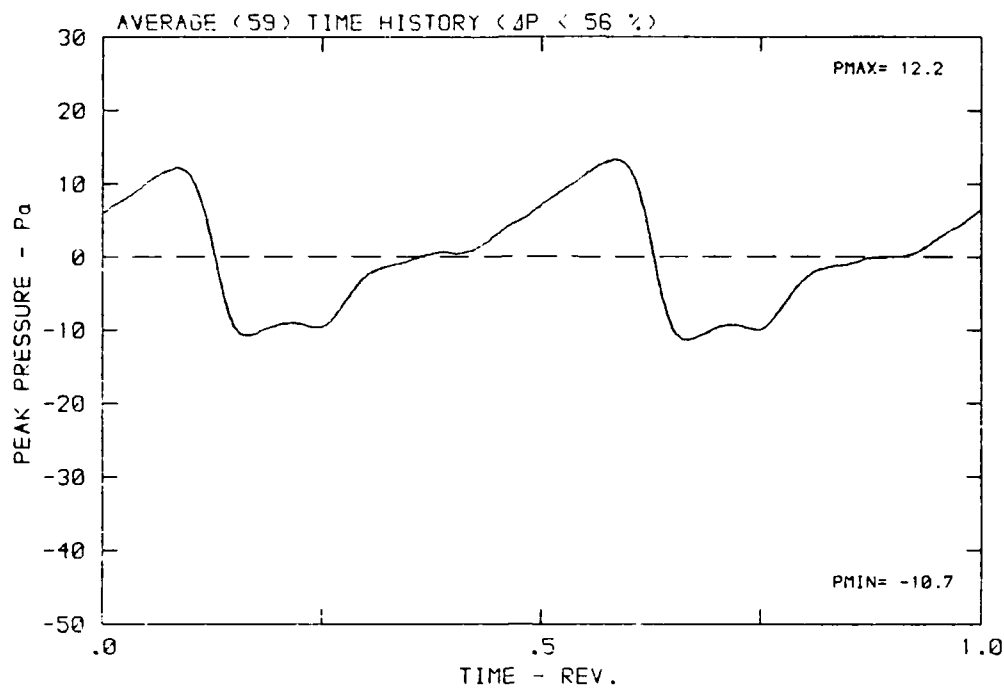
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$\beta$ : 19.9° MH: .6745 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 287.5 K



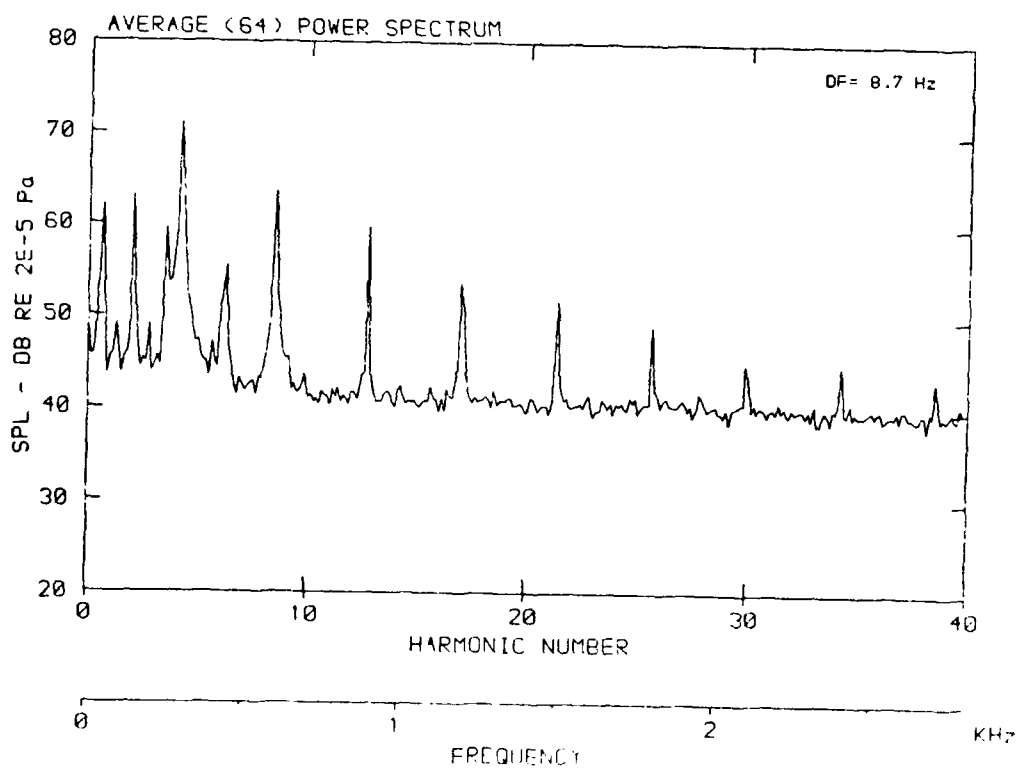
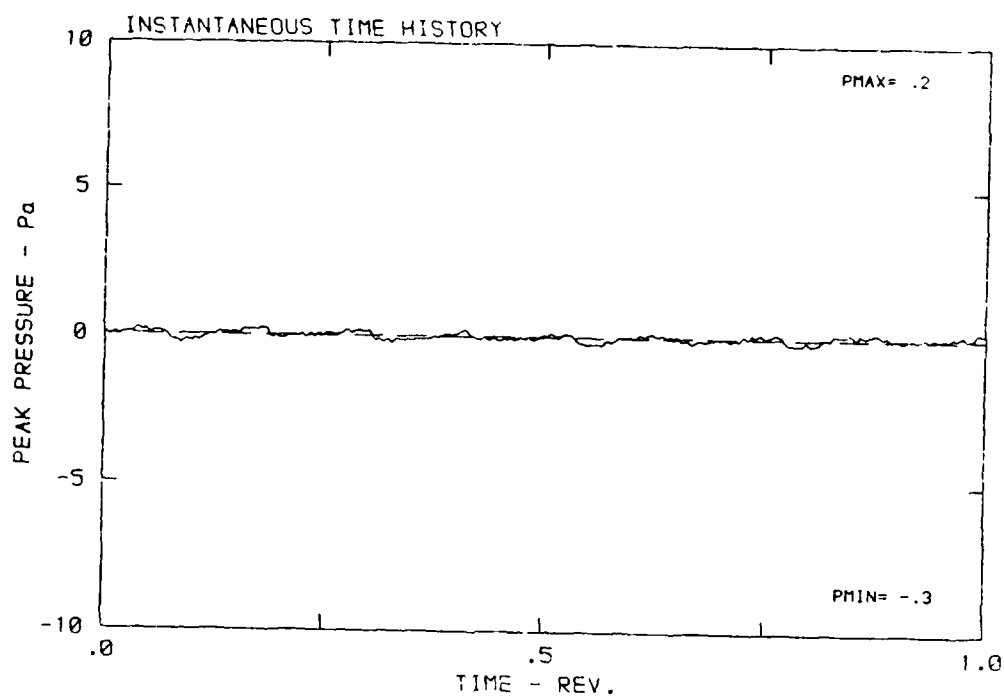
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$\beta$ : 19.9° MH: .6745 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 287.5 K



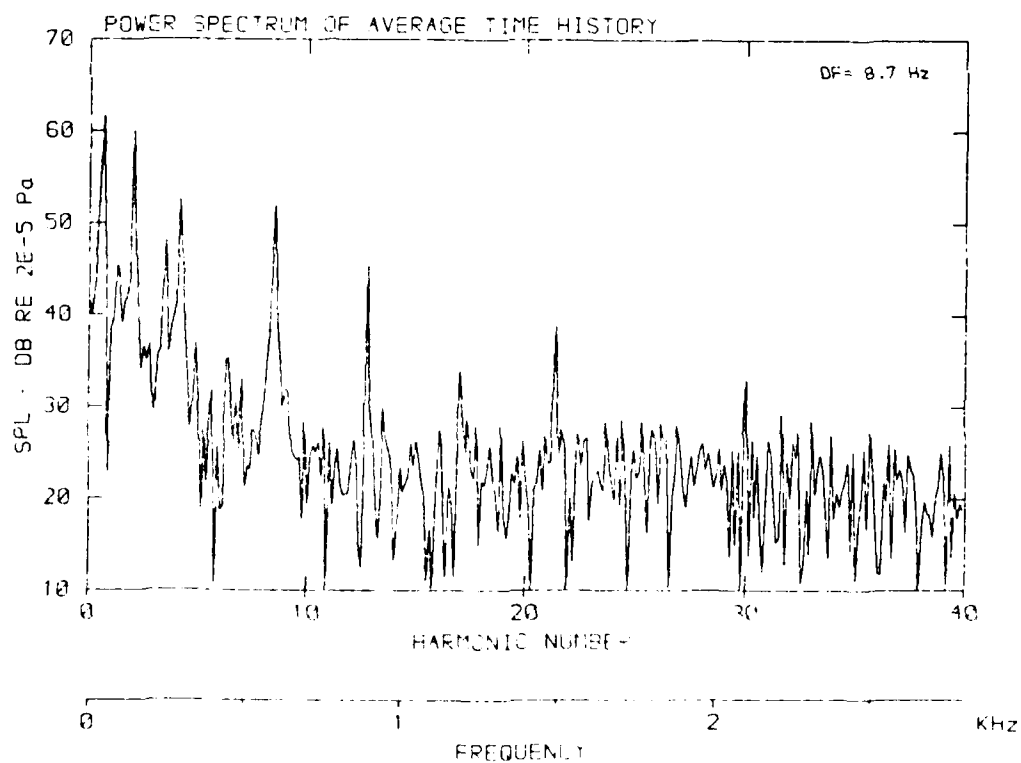
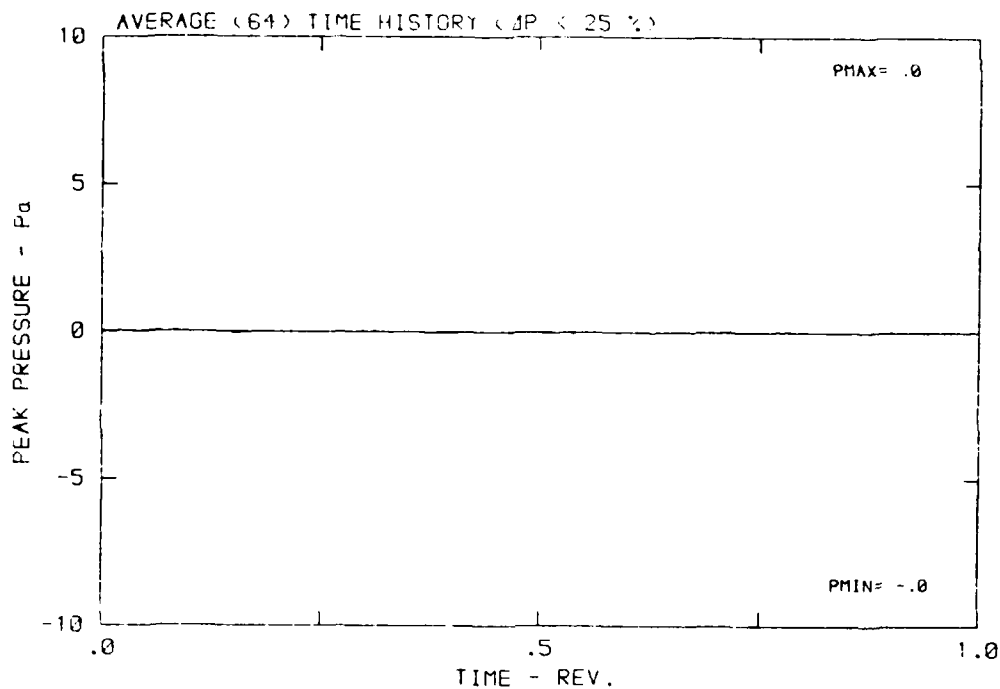
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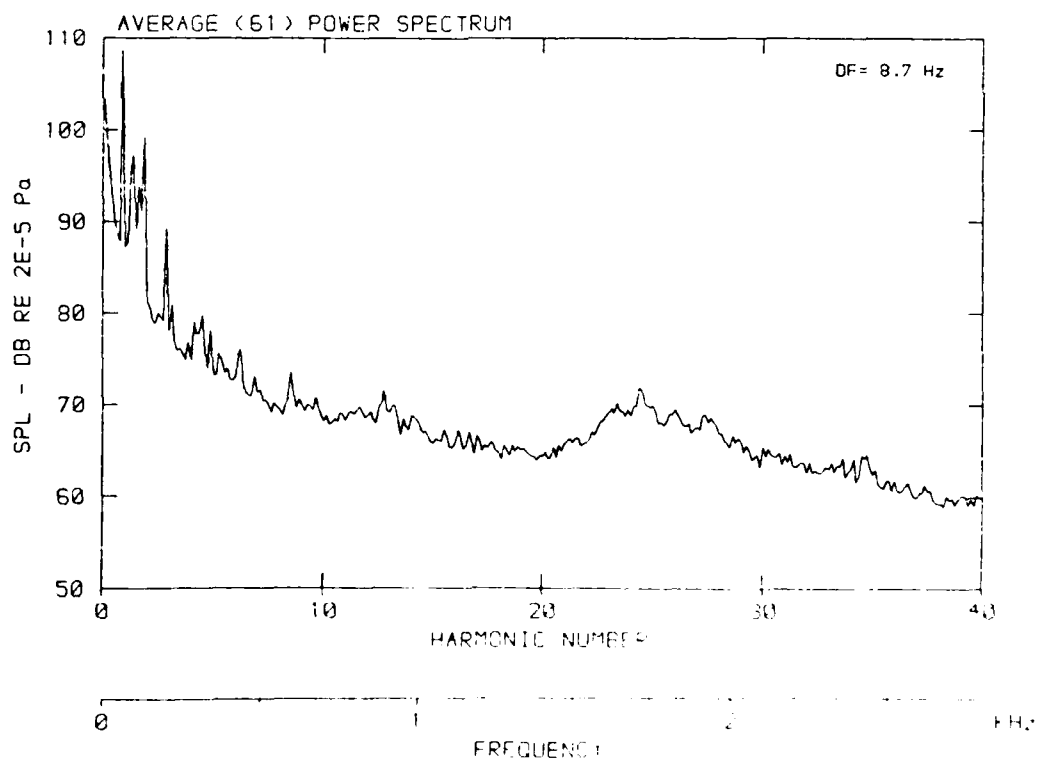
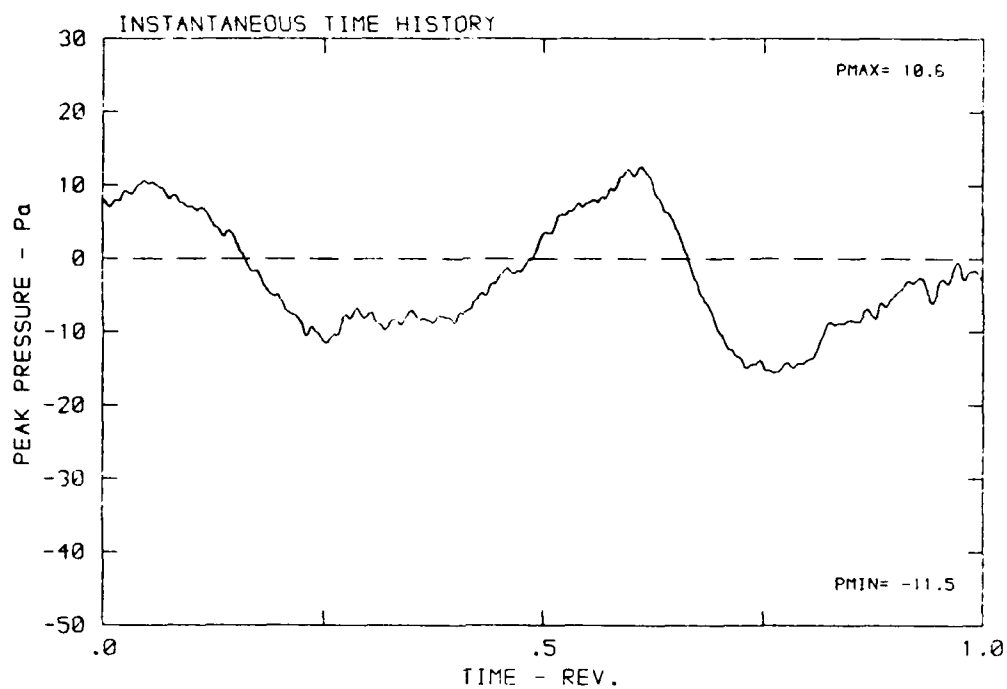
DATA POINT: FNC 7 RUN: 179 MP: 6

$\beta$ : 19.9° MH: .6745 n: 2100 rpm v u: .231  $\phi$ : .0° T: 287.5 K



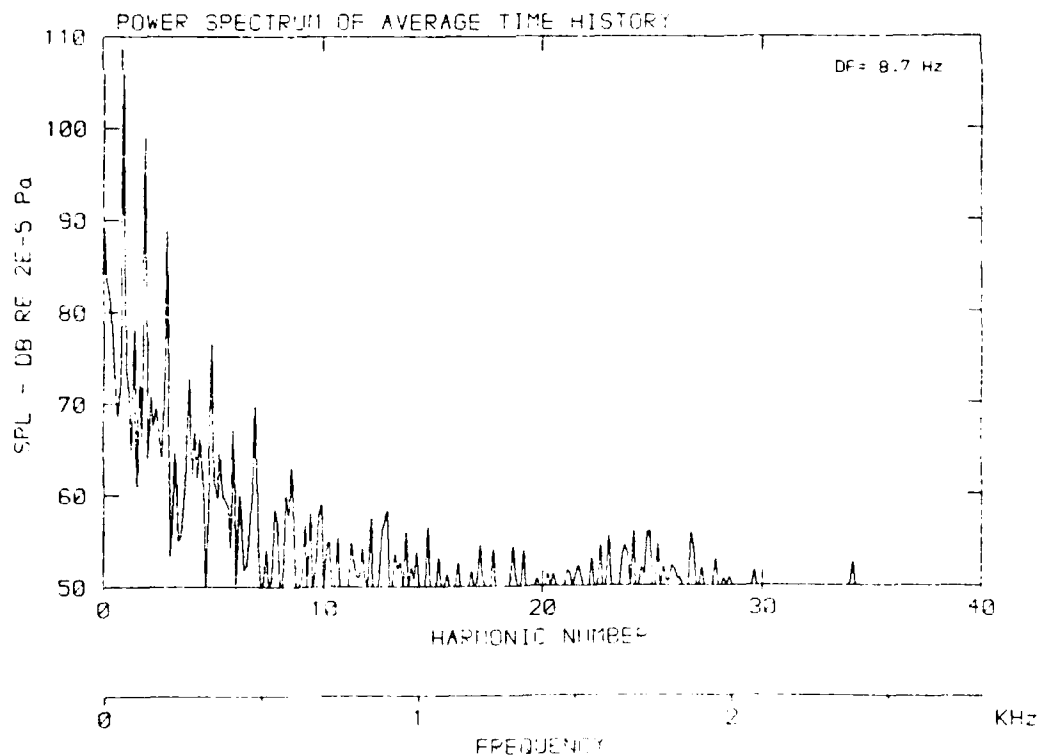
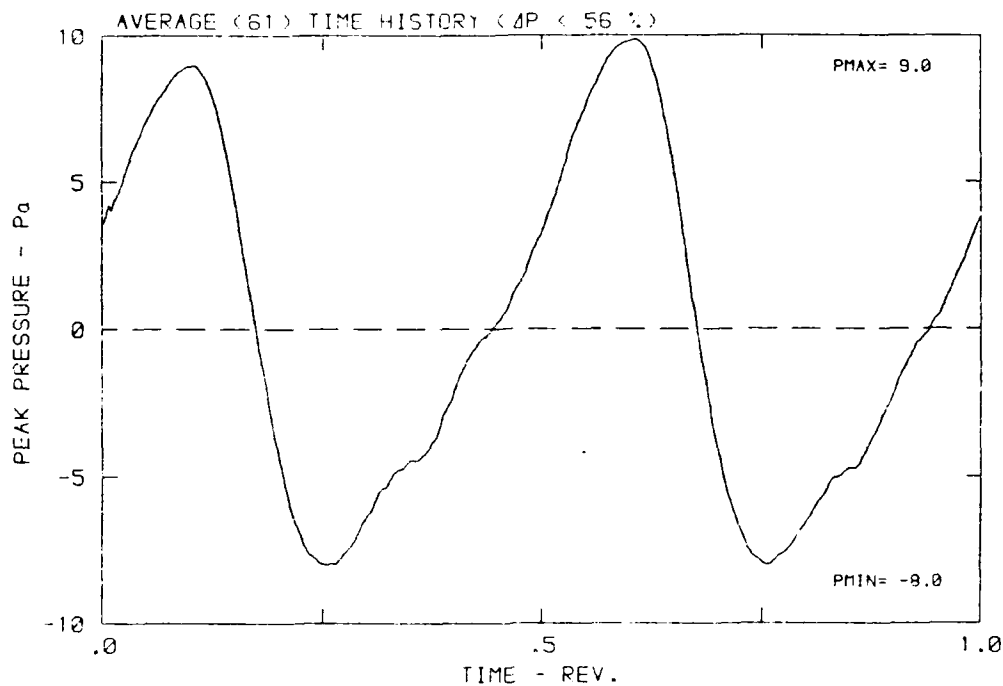
DATA POINT: FNC-7 RUN: 179 MP: 7

$\beta$ : 19.9° MH: .6745 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 287.5 K



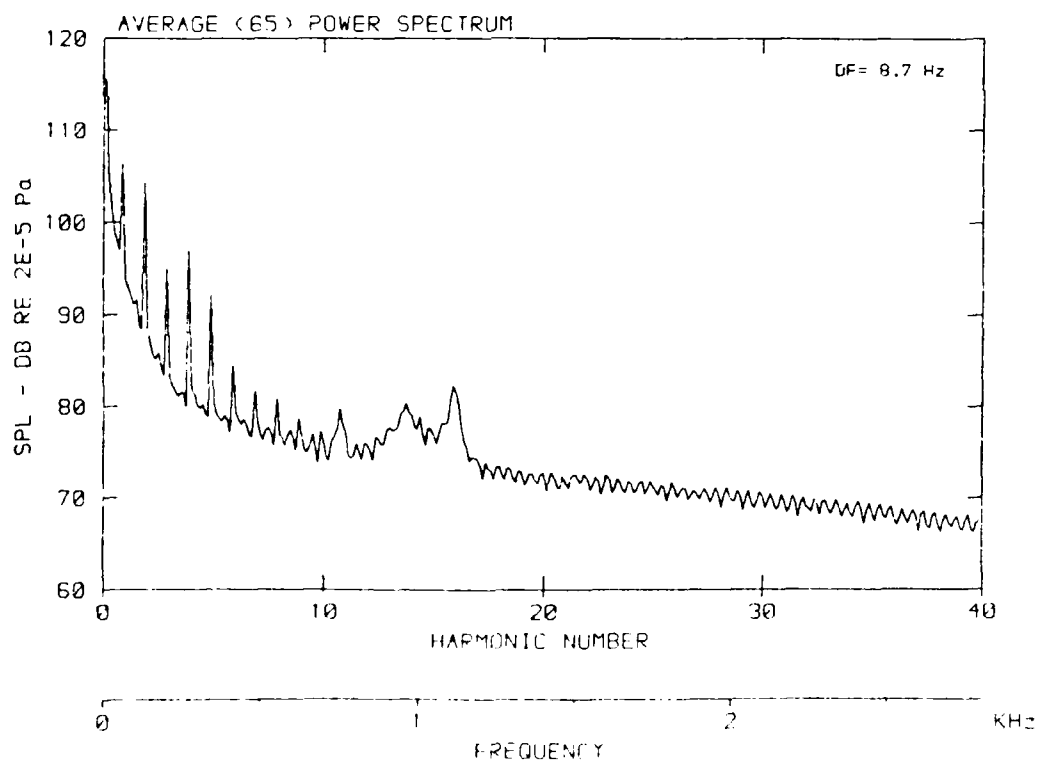
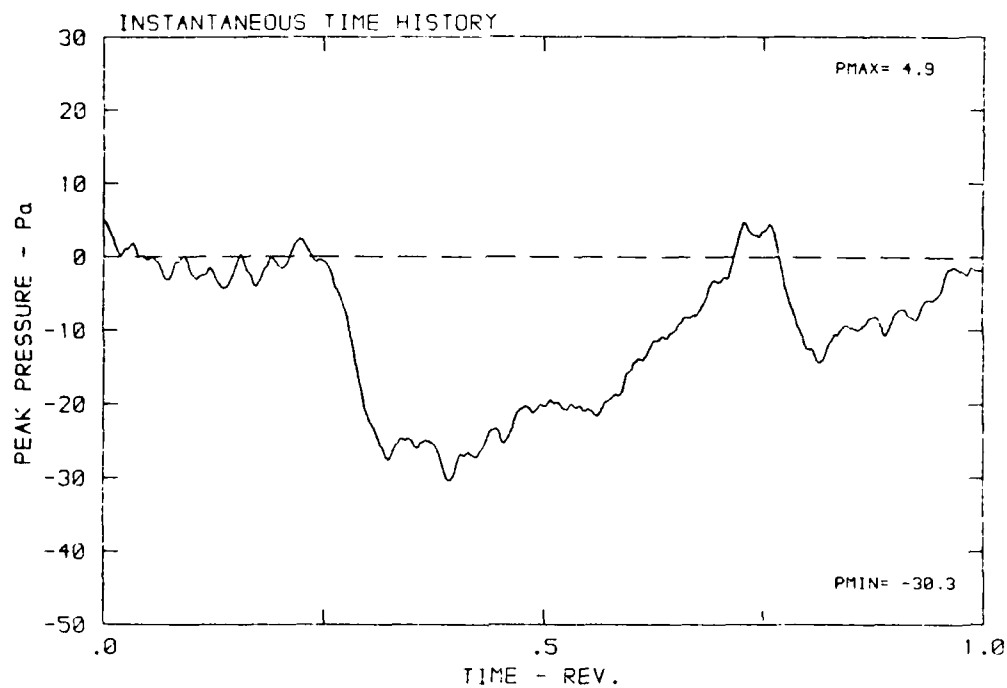
DATA POINT: FNC-7 RUN: 179 MP: 7

p: 19.9<sup>0</sup> MH: .6745 n: 2100 rpm v<sub>to</sub>: .231  $\phi$ : .0<sup>0</sup> T: 287.5 k



DATA POINT: FNC-7 RUN: 179 MP: 9

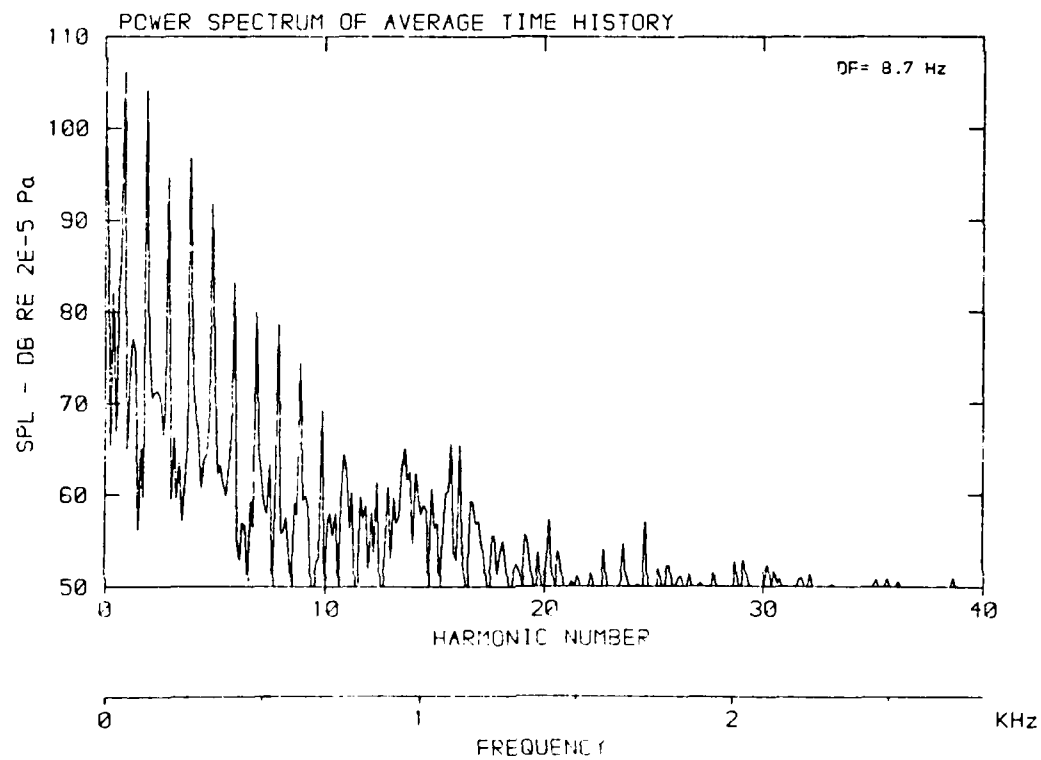
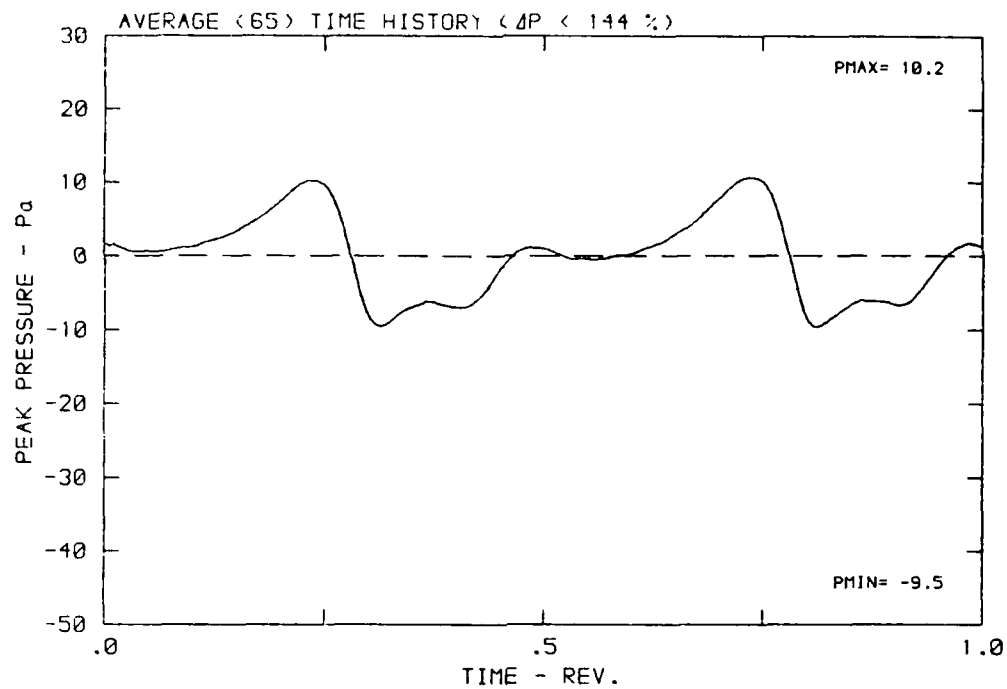
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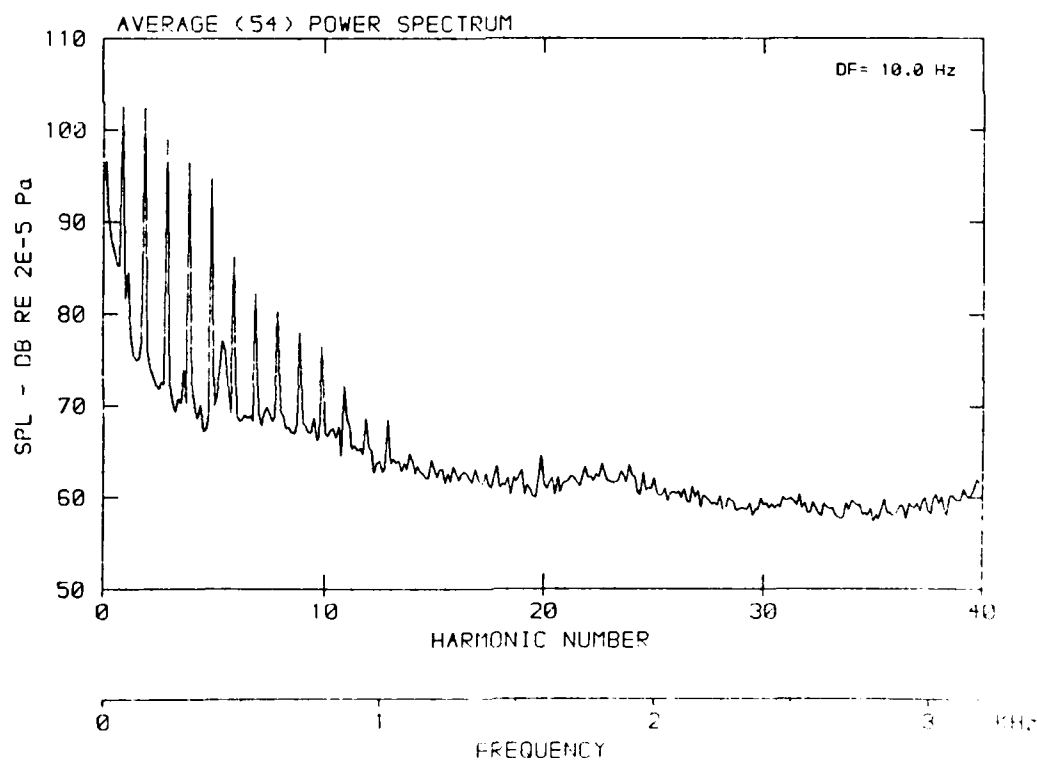
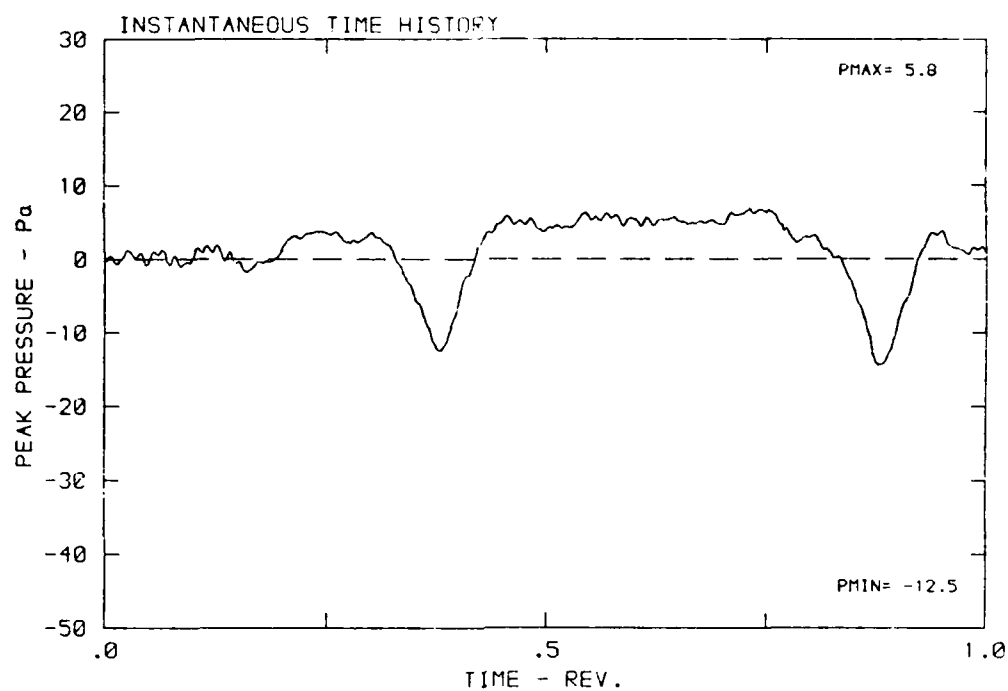
DATA POINT: FNC-7 RUN: 179 MP: 9

$\beta$ : 19.9° MH: .6745 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 287.5 K



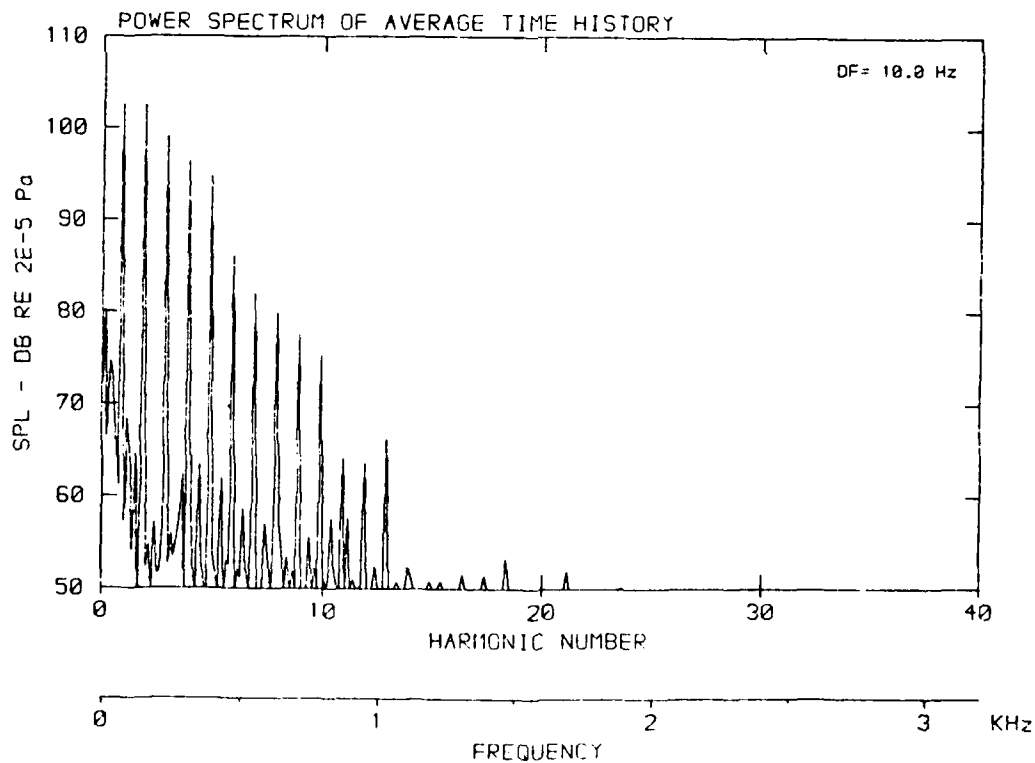
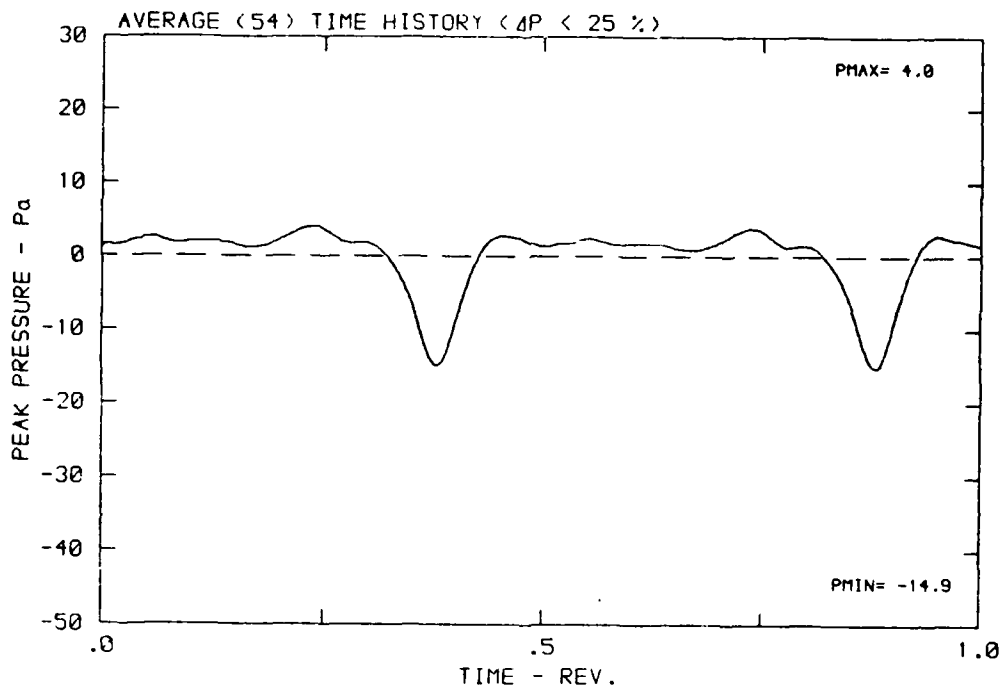
DATA POINT: FNC-E RUN: 180 MP:

$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $v/u$ : .203  $\phi$ : .0° T: 267.3 K



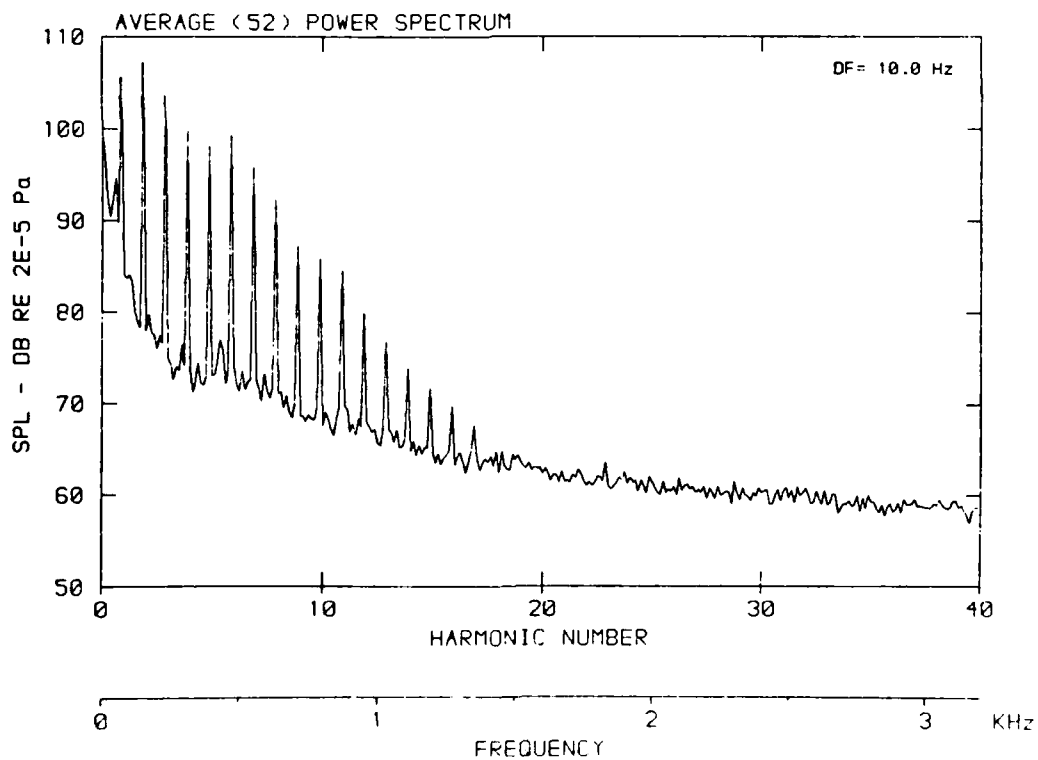
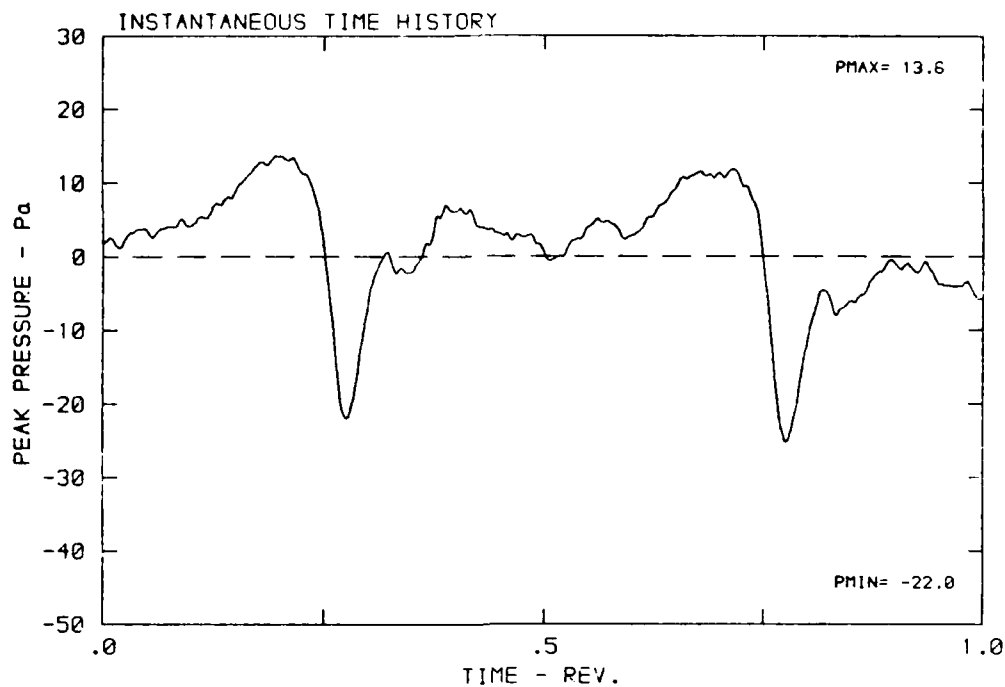
DATA POINT: FNC-8 RUN: 180 MP: 1

$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $v/u$ : .203  $\phi$ : .0° T: 287.9 K



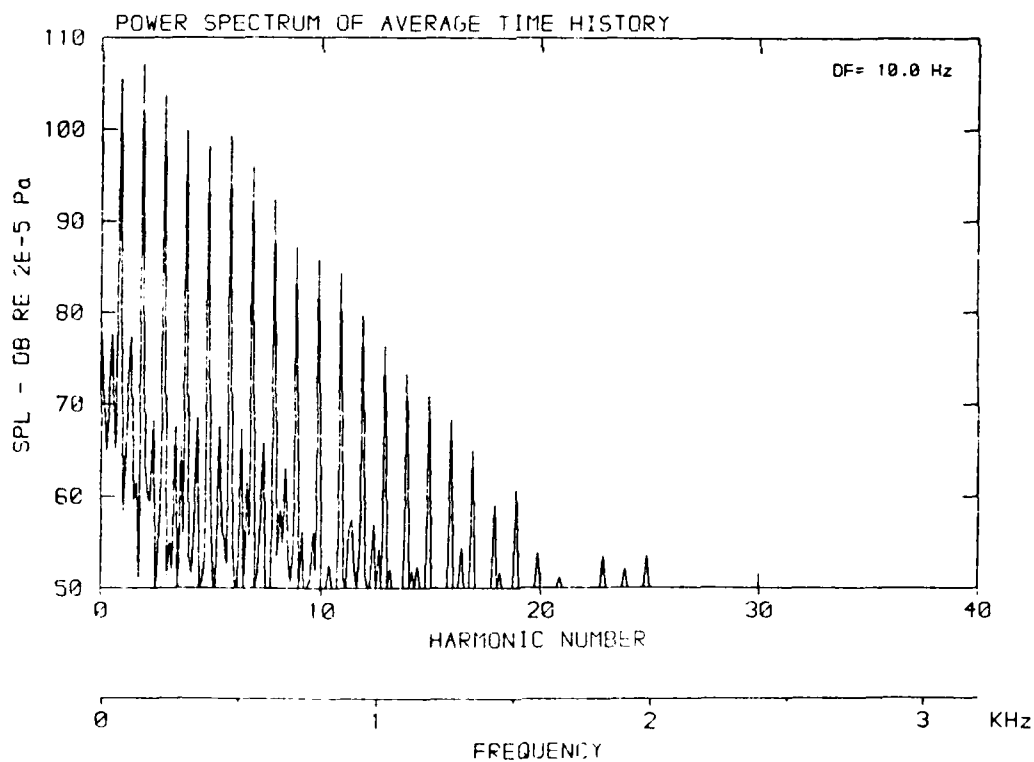
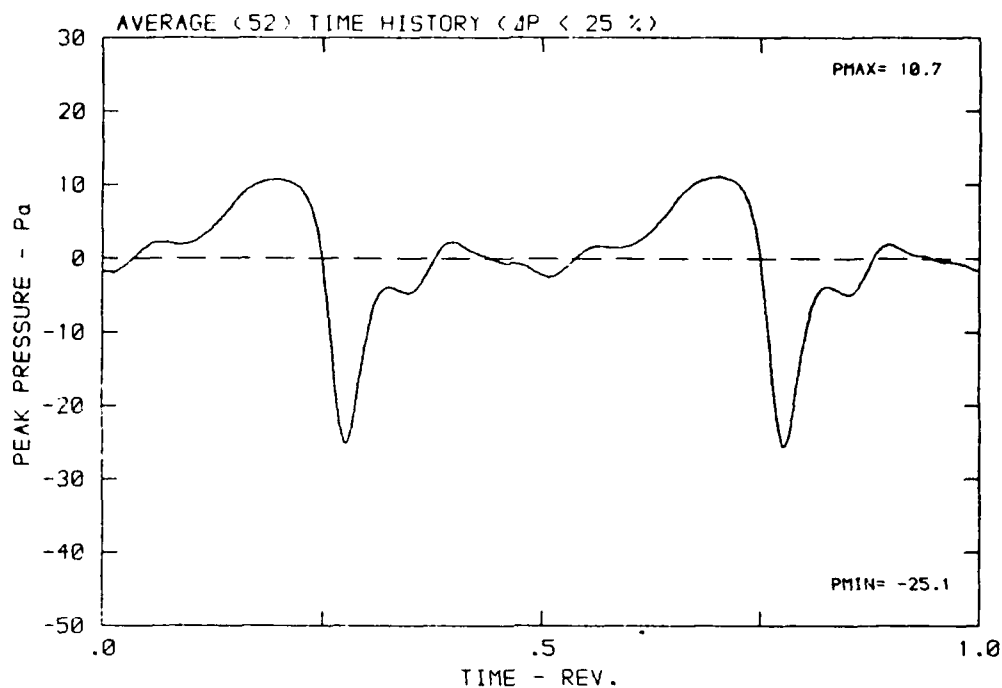
DATA POINT: FNC-8 RUN: 180 MP: 2

$\beta$ : 19.9° MH: .7659 n: 2400 rpm v/u: .203  $\phi$ : .0° T: 287.9 K



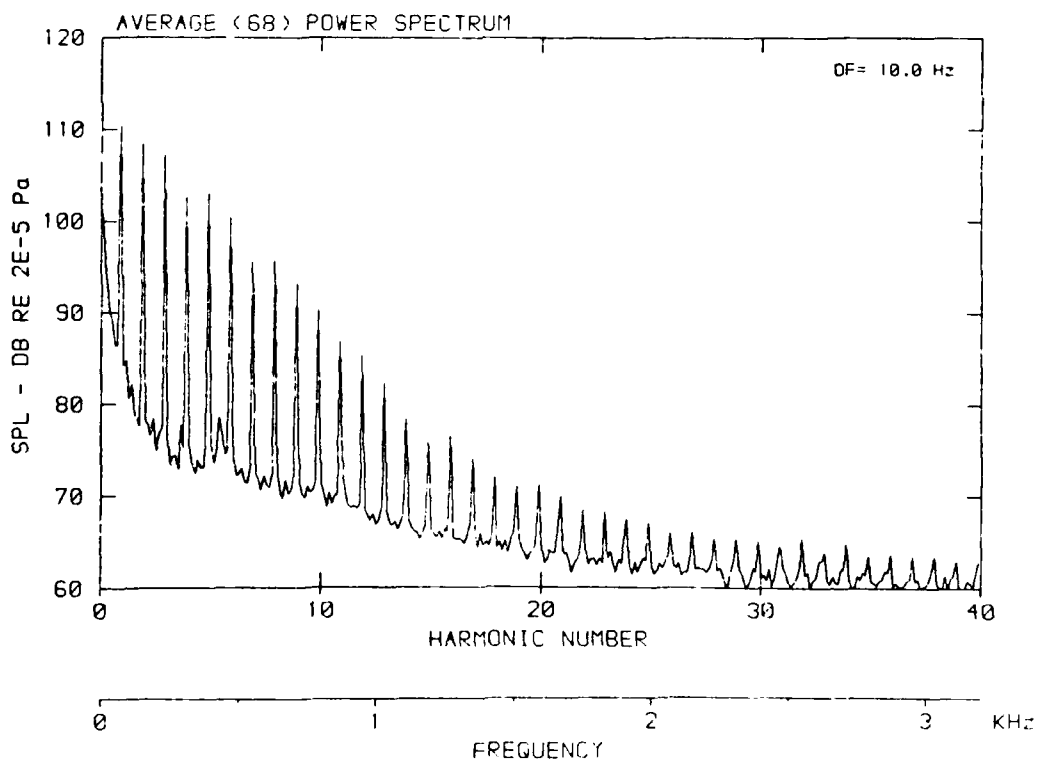
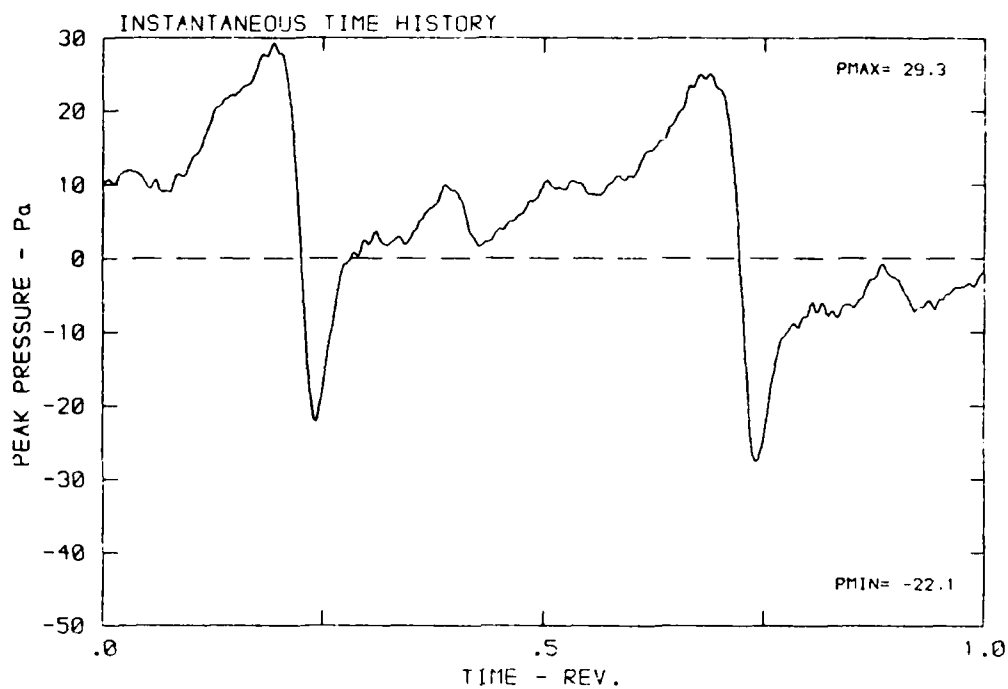
DATA POINT: FNC-8 RUN: 180 MP: 2

$\beta$ : 19.9° MH: .7659 n: 2400 rpm v/u: .203  $\phi$ : .0° T: 287.9 K



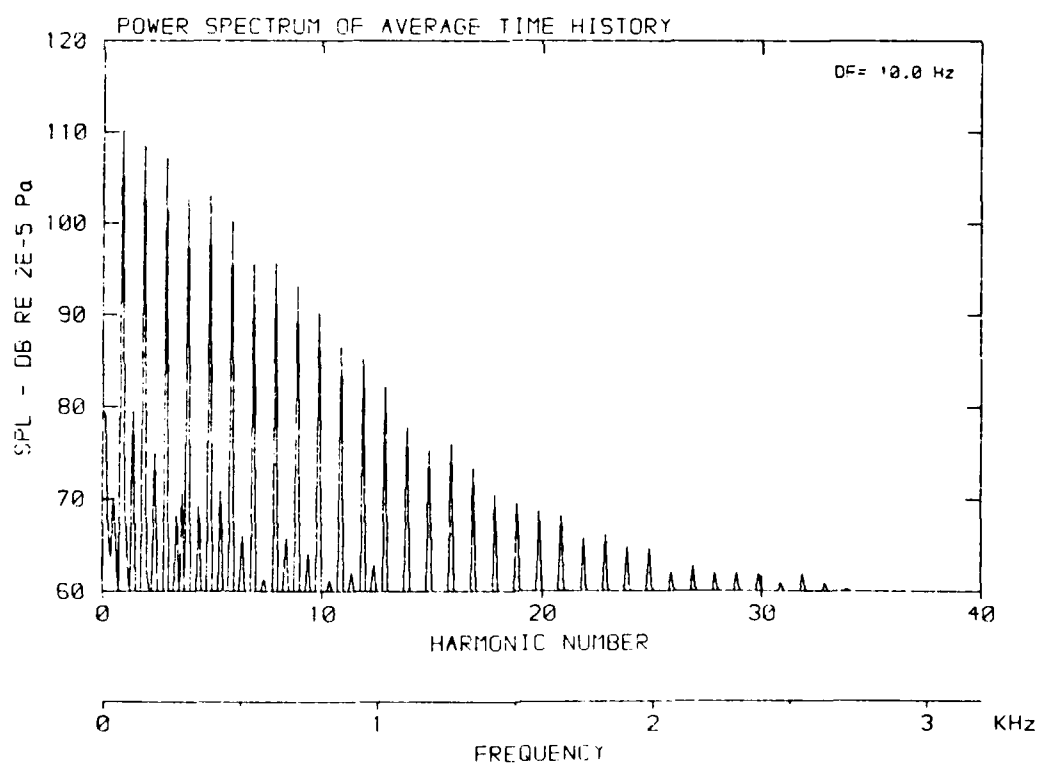
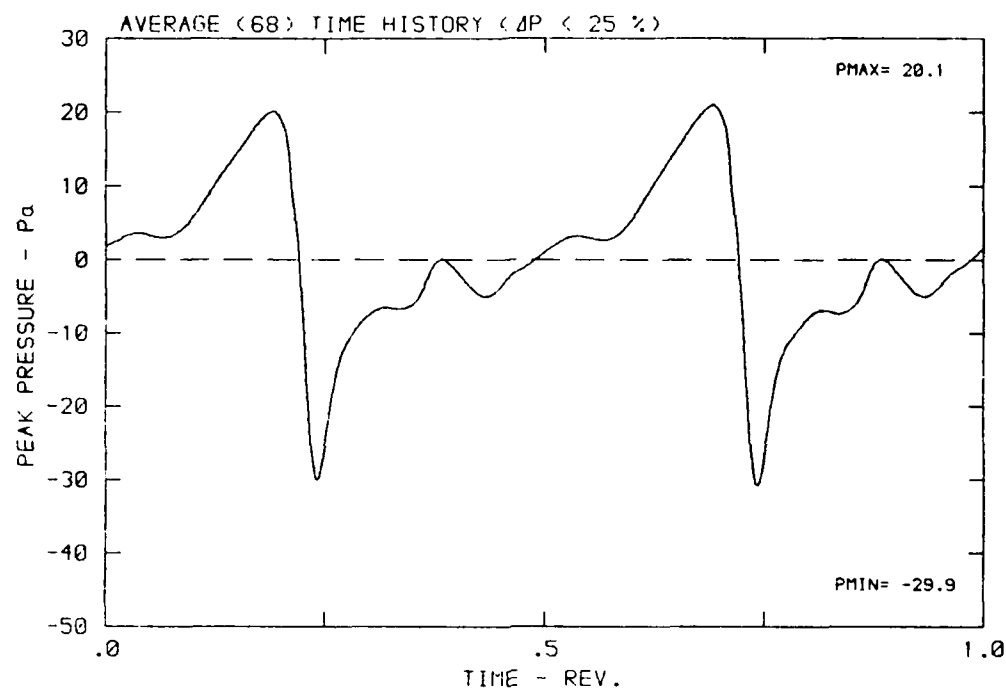
DATA POINT: FNC-8 RUN: 180 MP: 3

$\beta$ : 19.9° MH: .7659 n: 2400 rpm v/u: .203  $\phi$ : .0° T: 287.9 K



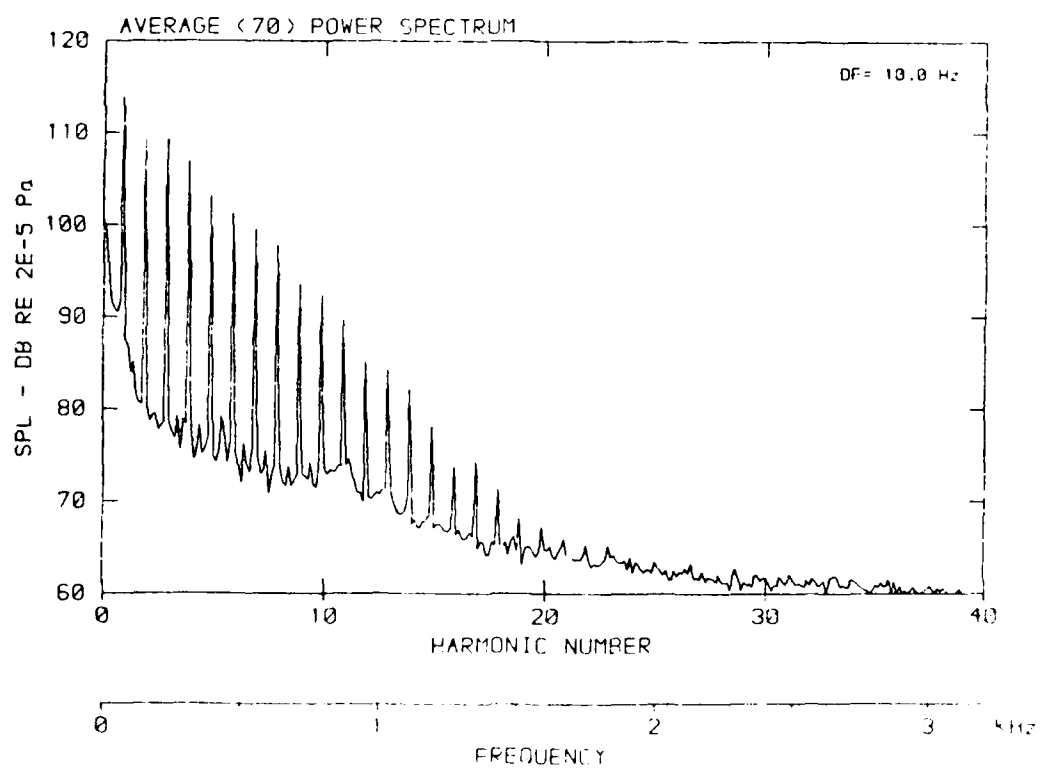
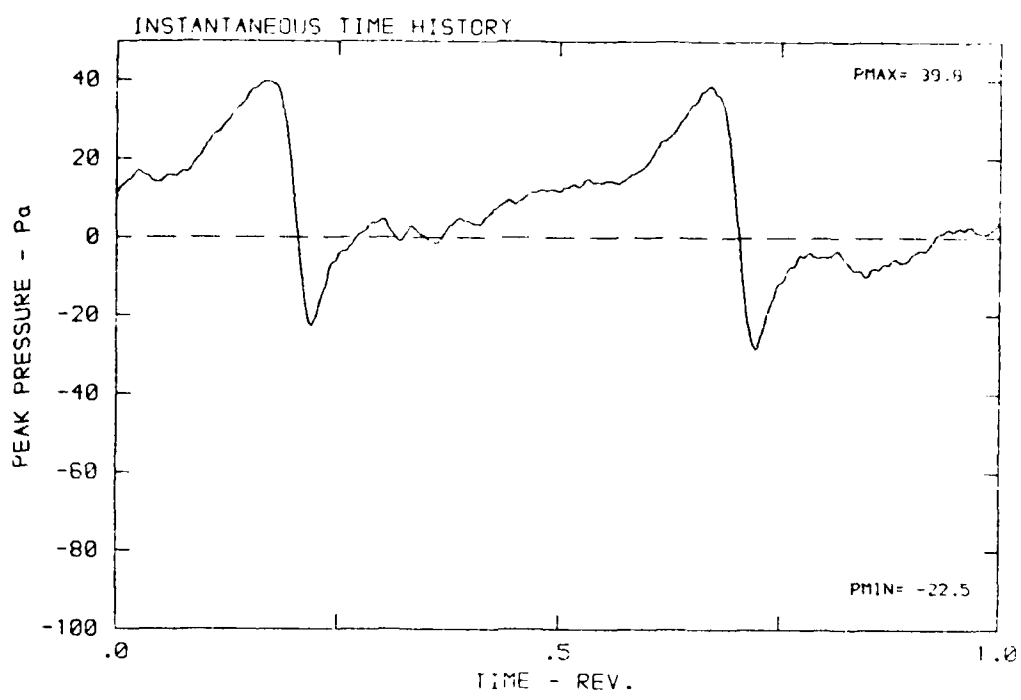
DATA POINT: FNC-8 RUN: 180 MP: 3

$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $v/u$ : .203  $\phi$ : .0° T: 287.9 K



DATA POINT: FNC-8 RUN: 180 MP: 4

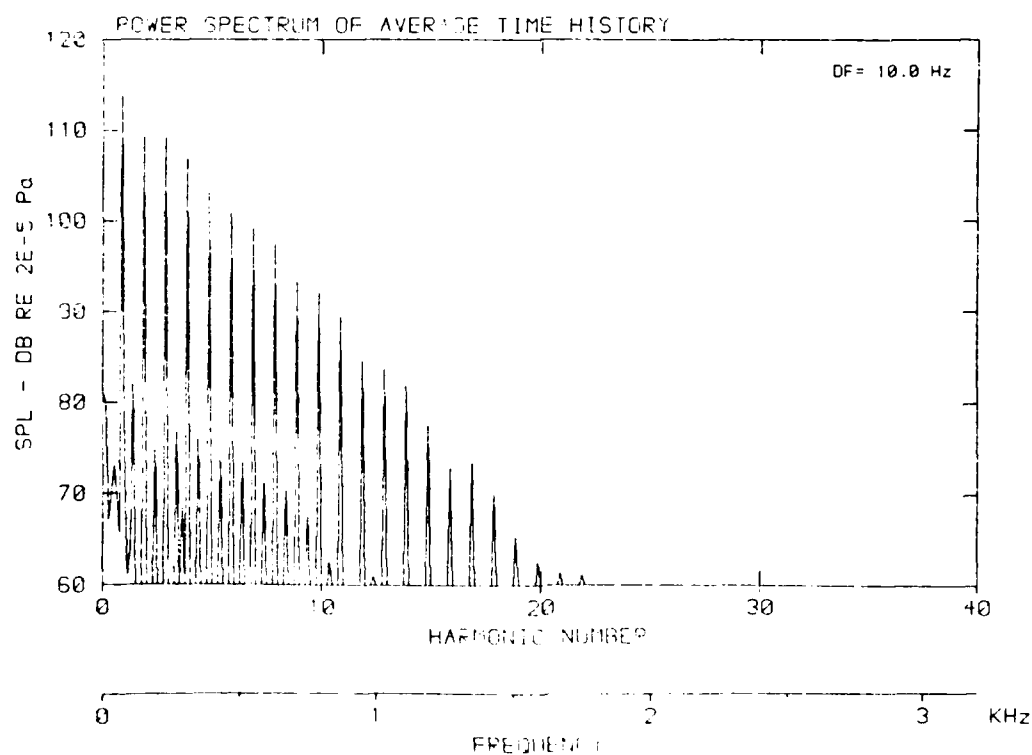
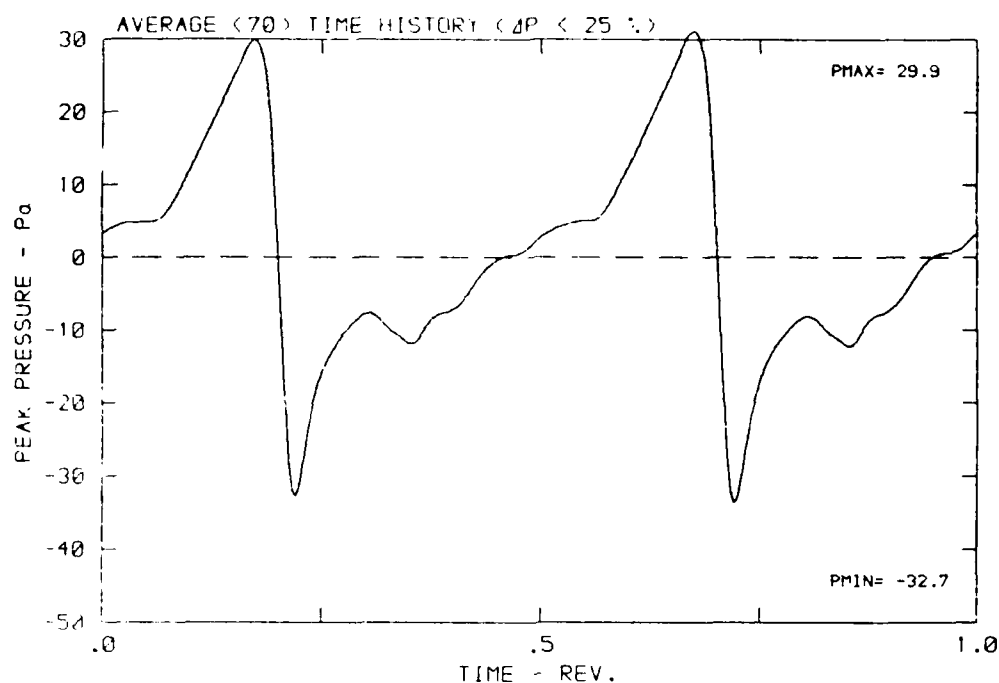
$\beta$ : 19.9° MH: .7659 n: 2400 rpm v/u: .203  $\phi$ : .0° T: 267.1





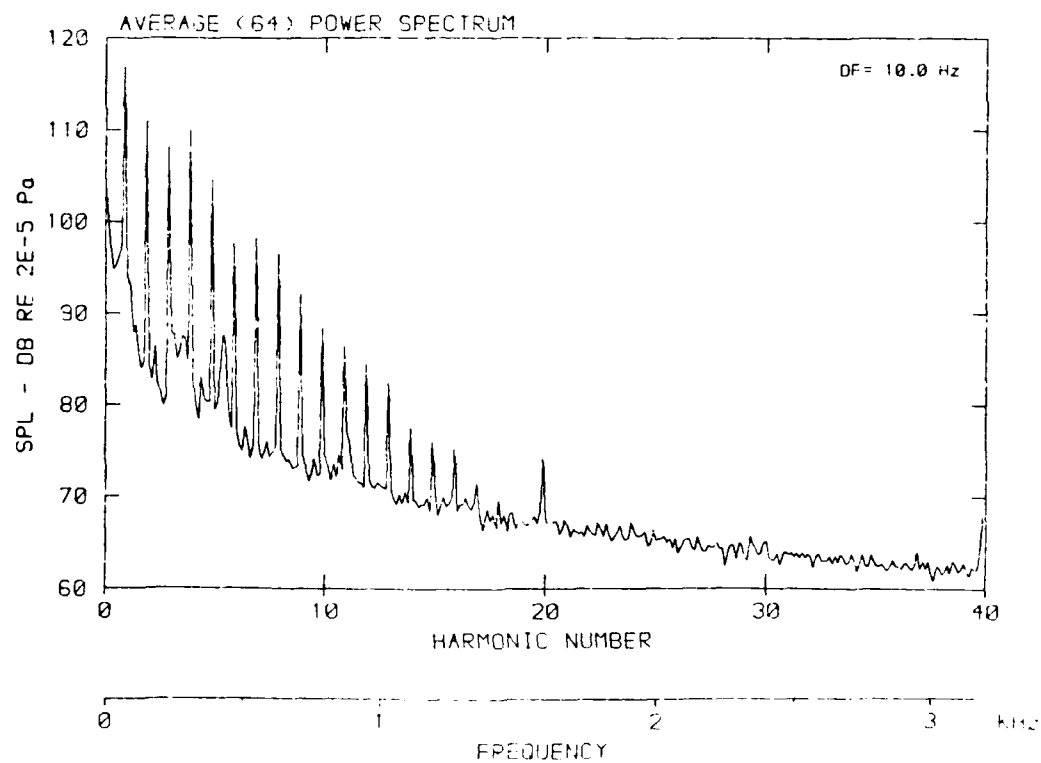
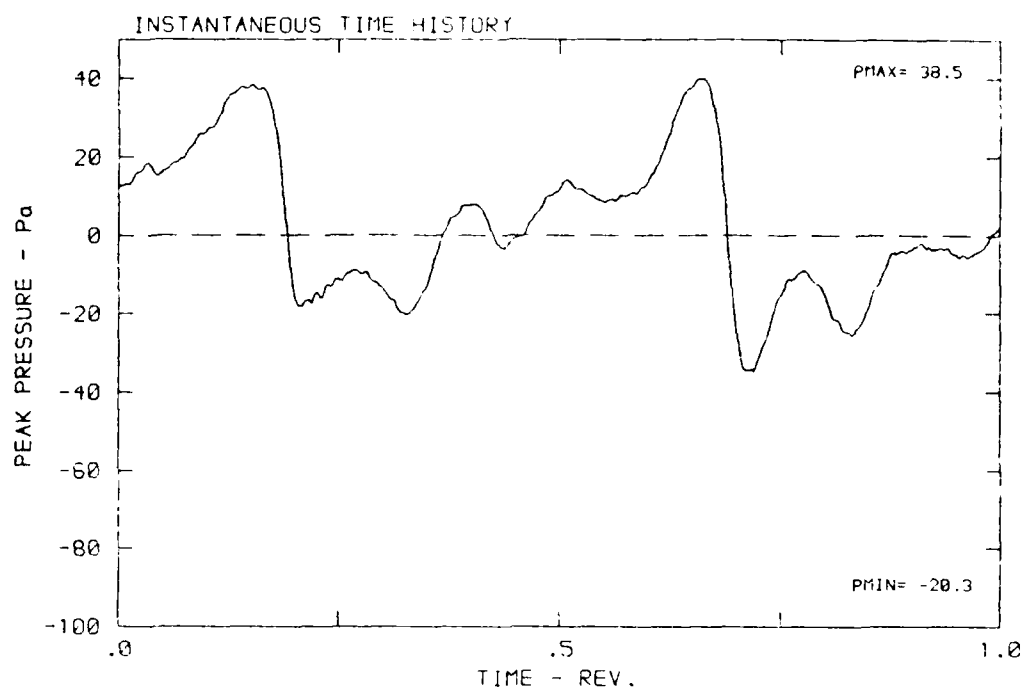
DATA POINT: FNC-8 RUN: 180 MP: 4

$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $\nu$ : .203  $\phi$ : .0° T: 287.9 K



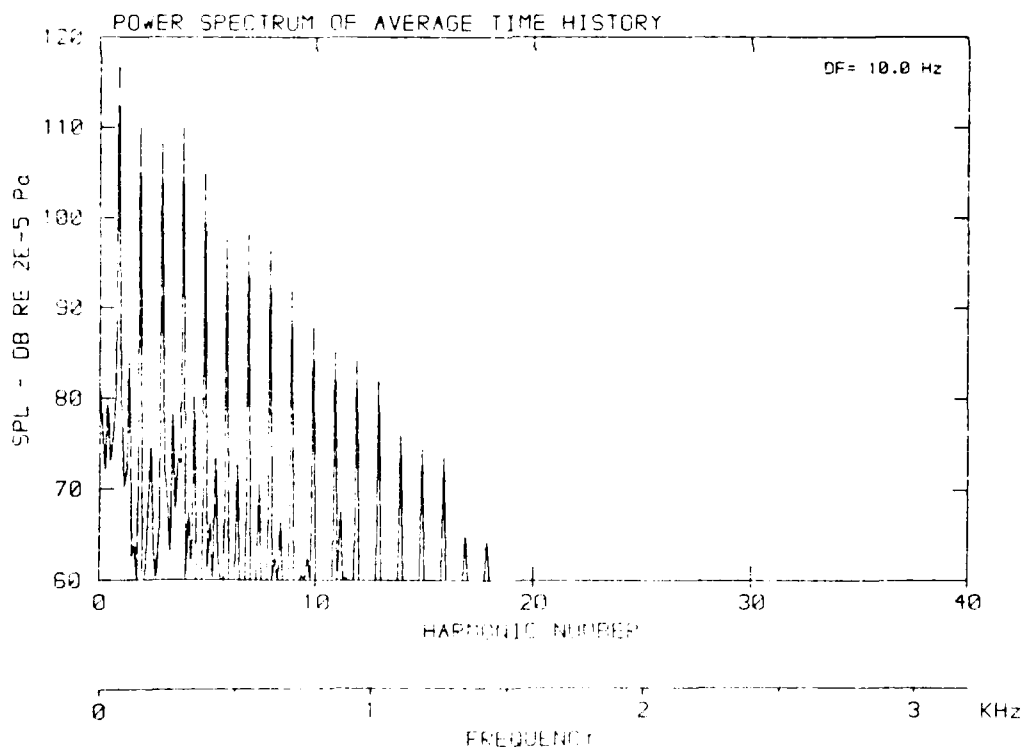
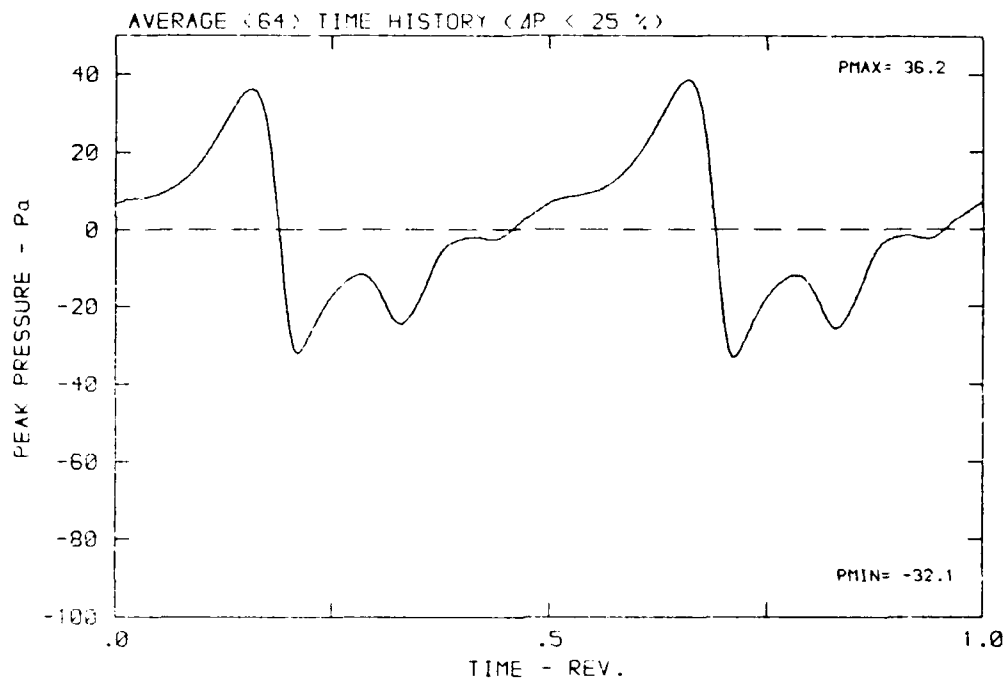
DATA POINT: ENC-8 RUN: 180 MP: 5

$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $\nu/\alpha$ : .203  $\phi$ : .0° T: 287.9



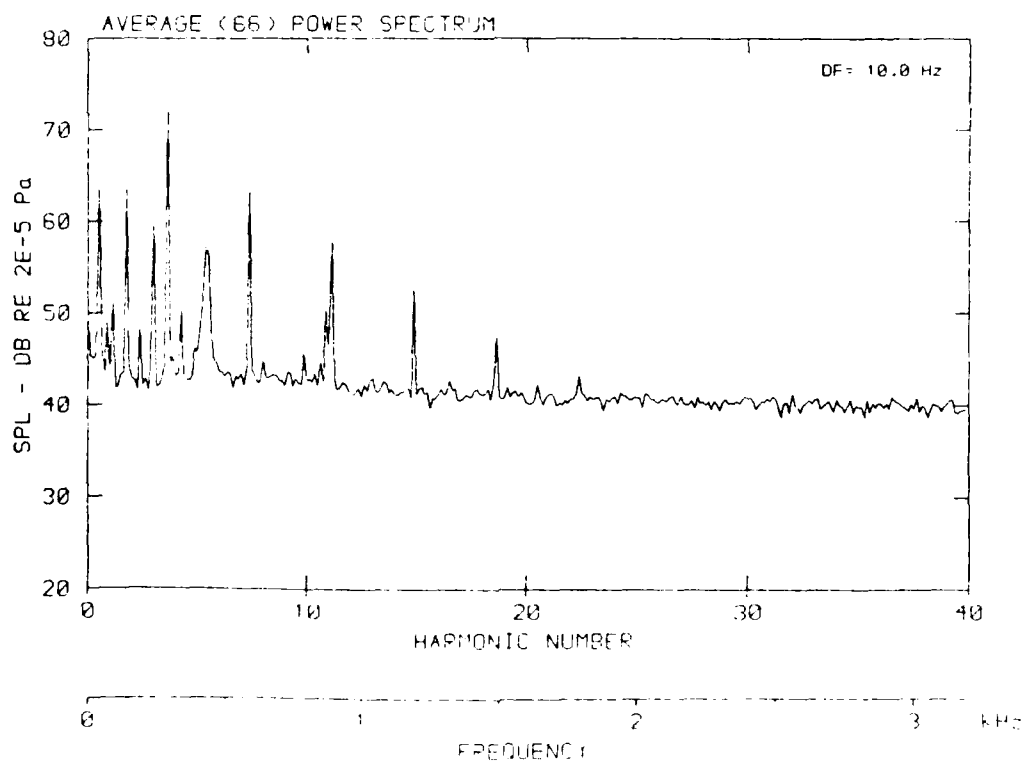
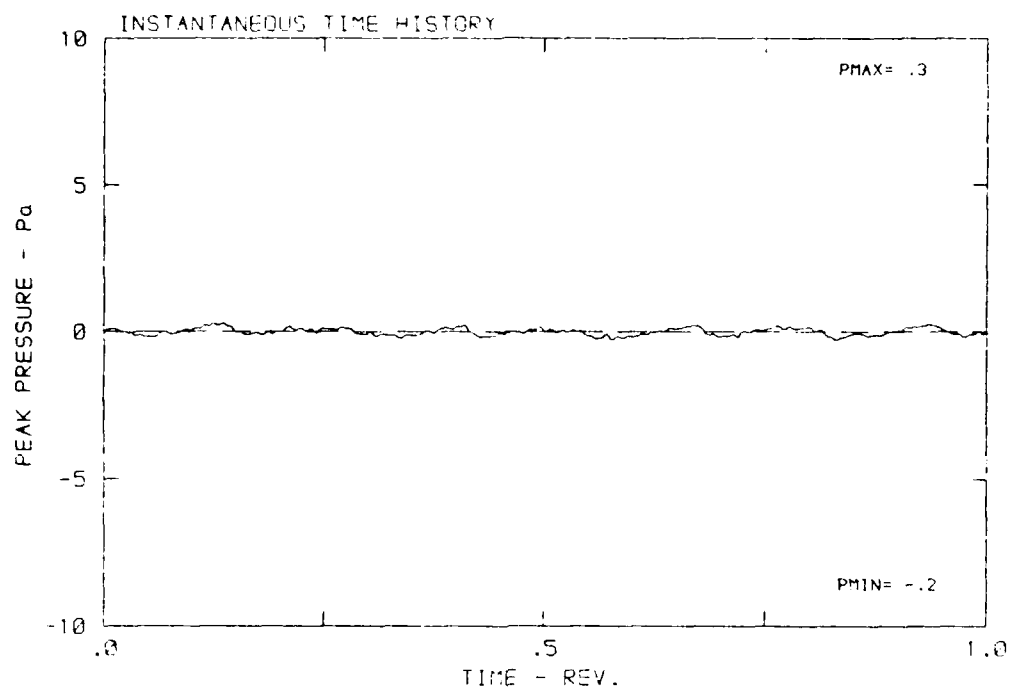
DATA POINT: FNC-8 RUN: 180 MP: 5

$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $v/u$ : .203  $\phi$ : .0° T: 287.9 K



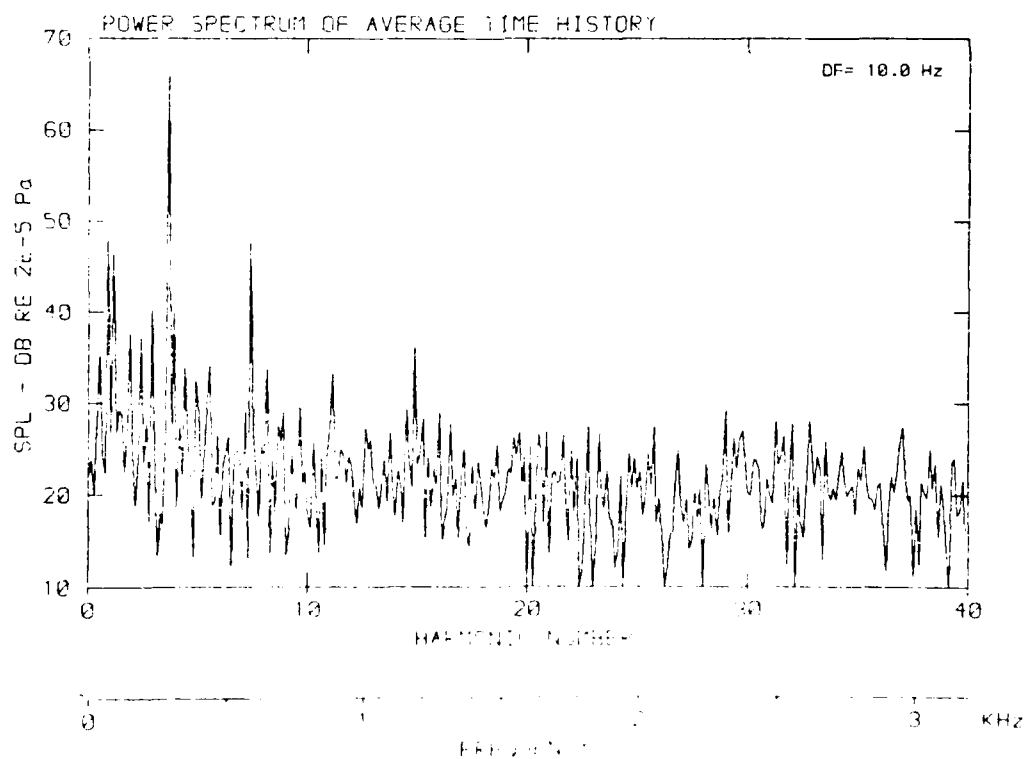
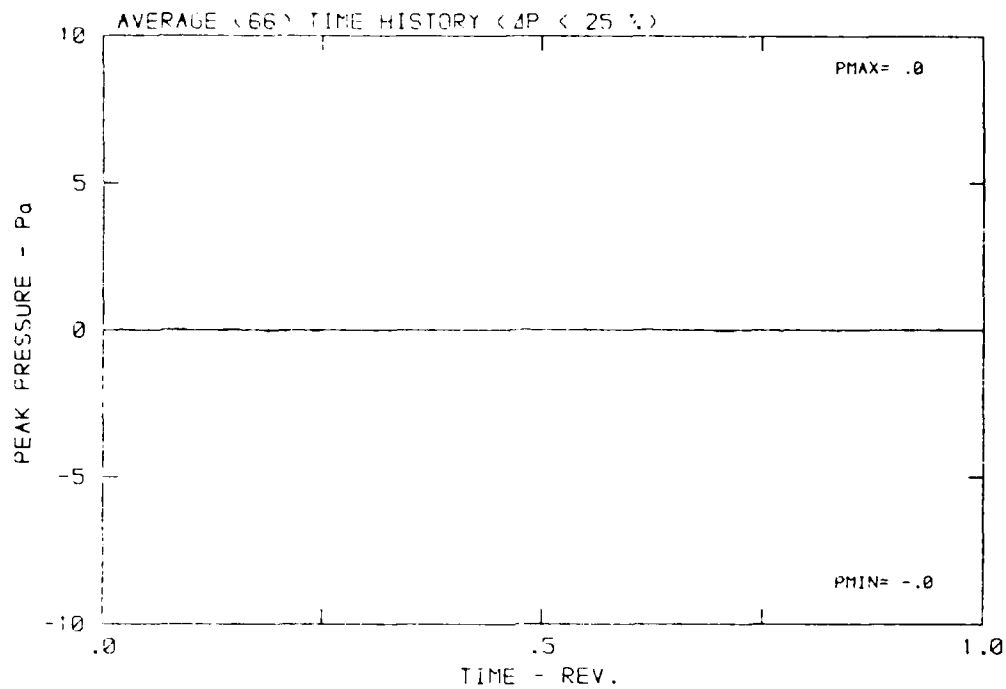
DATA POINT: FNC-8 RUN: 180 MF: 5

$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $\nu_a$ : .203  $\phi$ : .0° T: 287.3 K



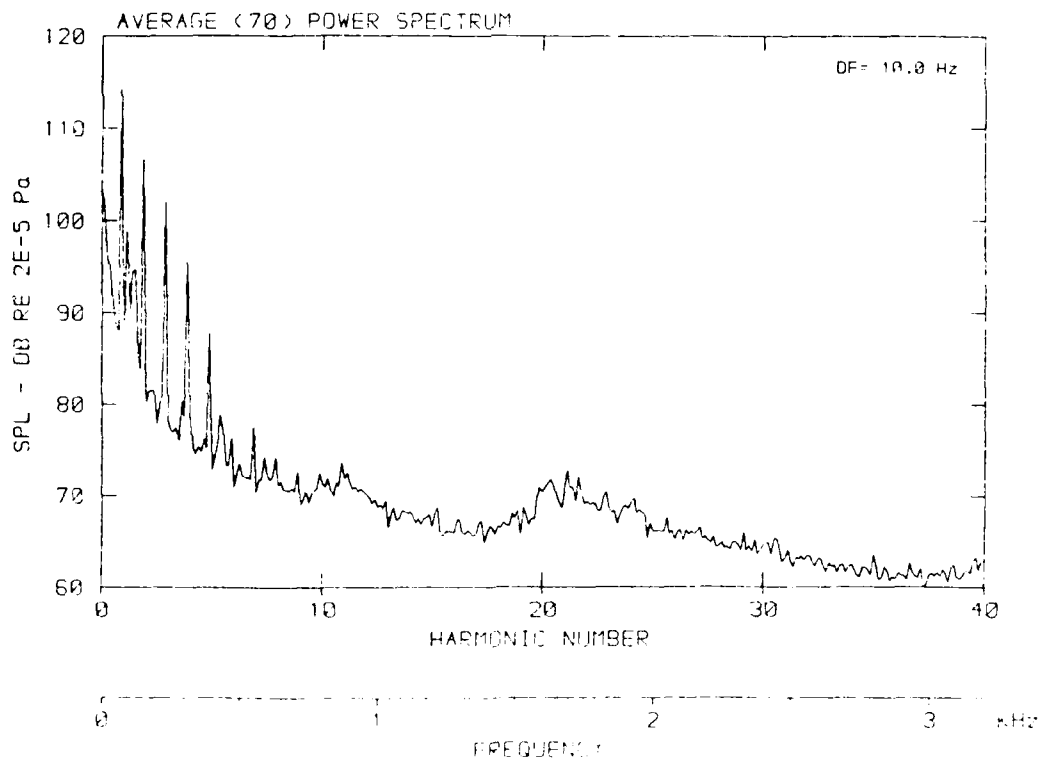
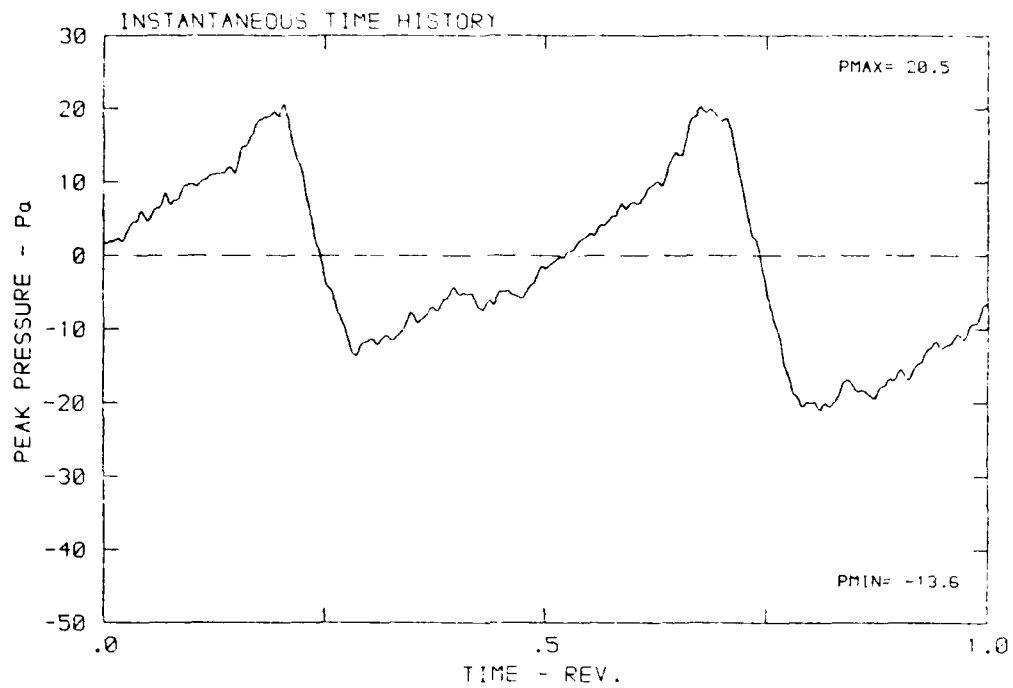
DATA POINT: FNC-8 RUN: 180 MP: 6

$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $v/u$ : .203  $\phi$ : .0° T: 287.9 K



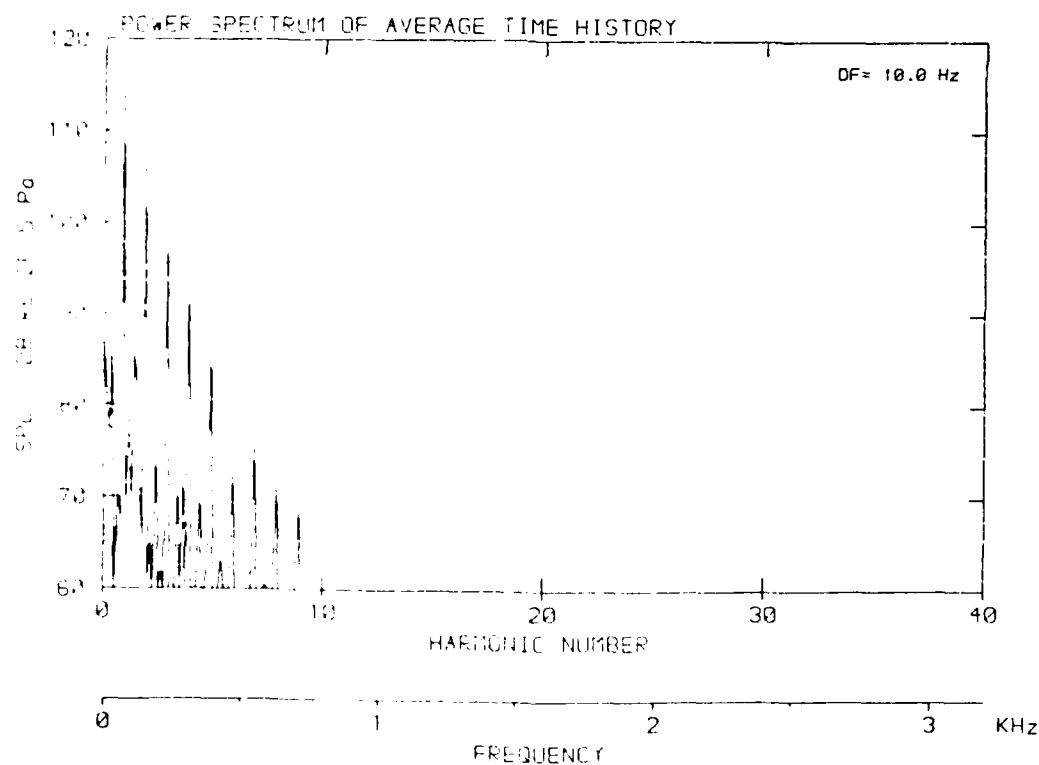
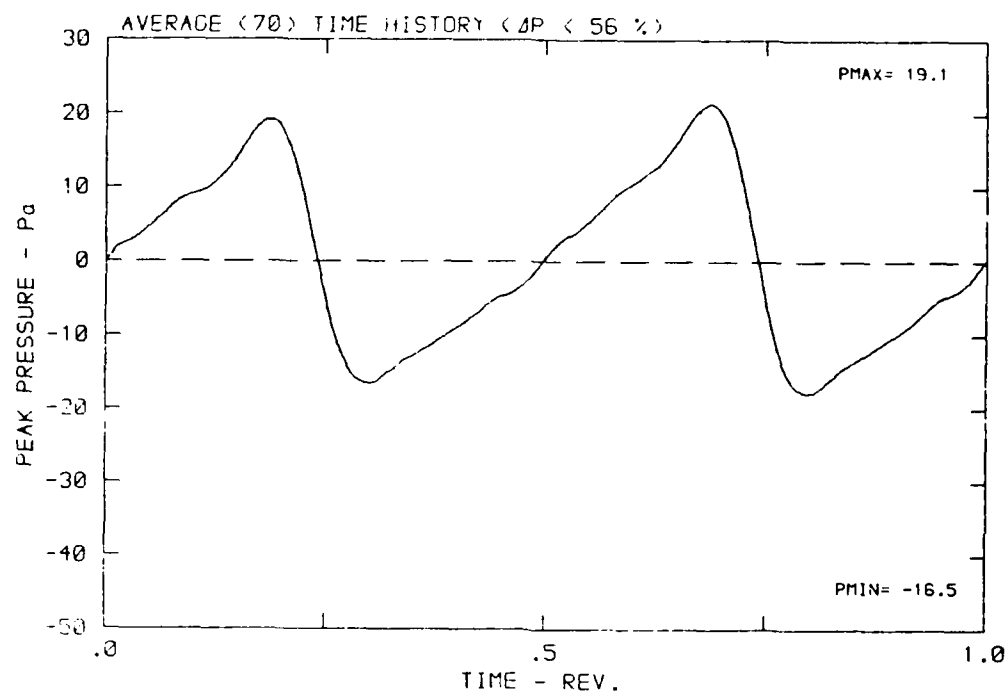
DATA POINT: ENC-8 RUN: 180 MF: 7

$\beta$ : 19.9° MH: .7659 n: 2400 rpm v/a: .203  $\phi$ : .0° T: 267.0 s



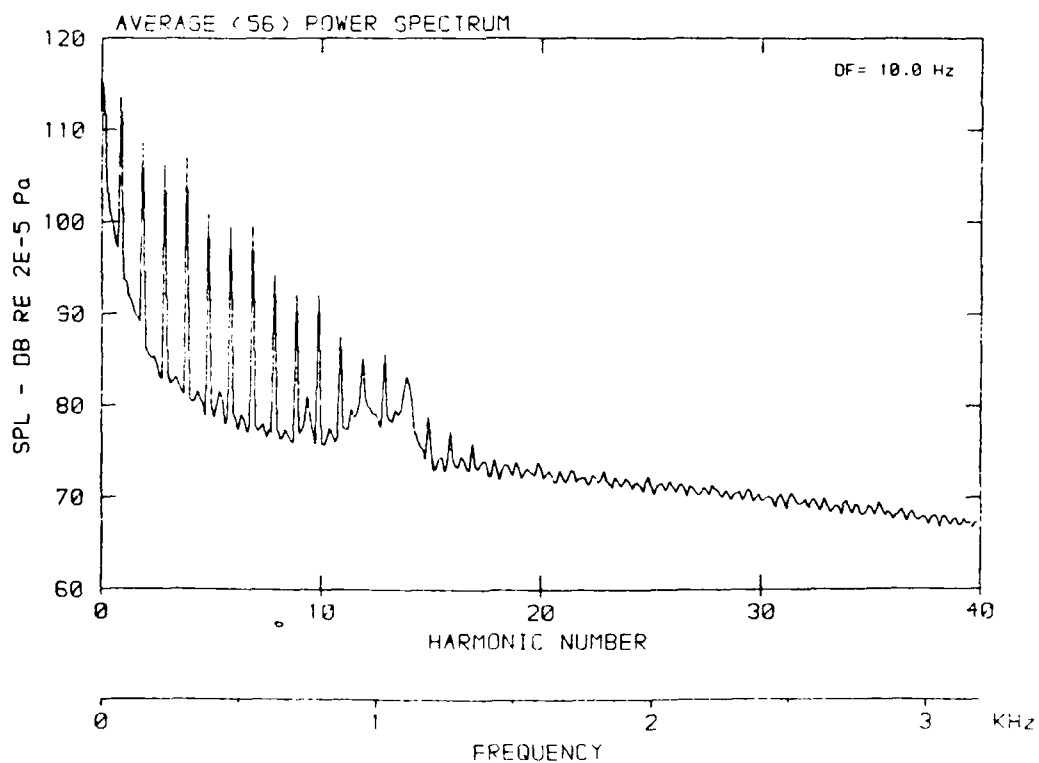
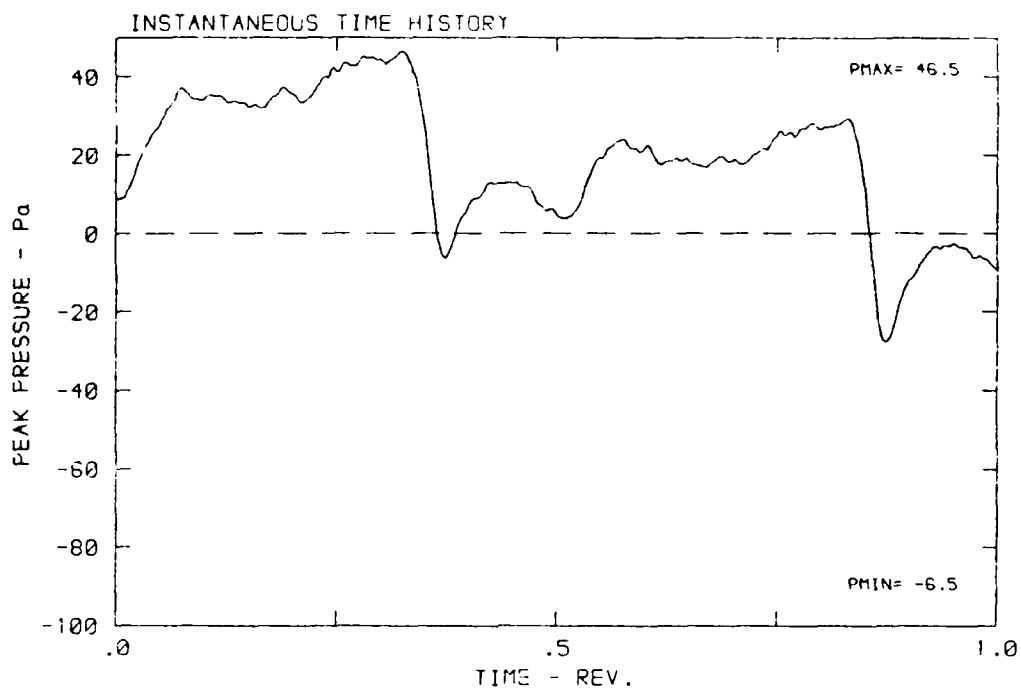
DATA POINT: FNC-8 RUN: 180 MP: 7

$\beta$ : 19.9° MH: .7659 n: 2400 rpm v/u: .203  $\phi$ : .0° T: 287.9 K



DATA POINT: FNC-8 RUN: 180 MP: 8

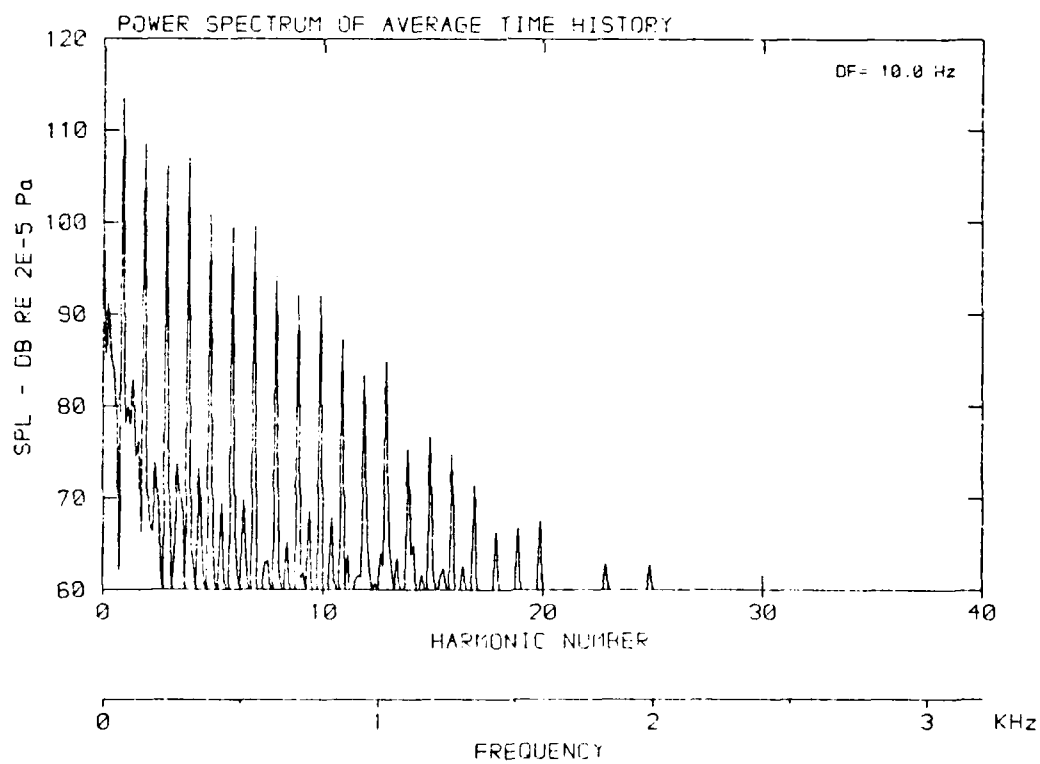
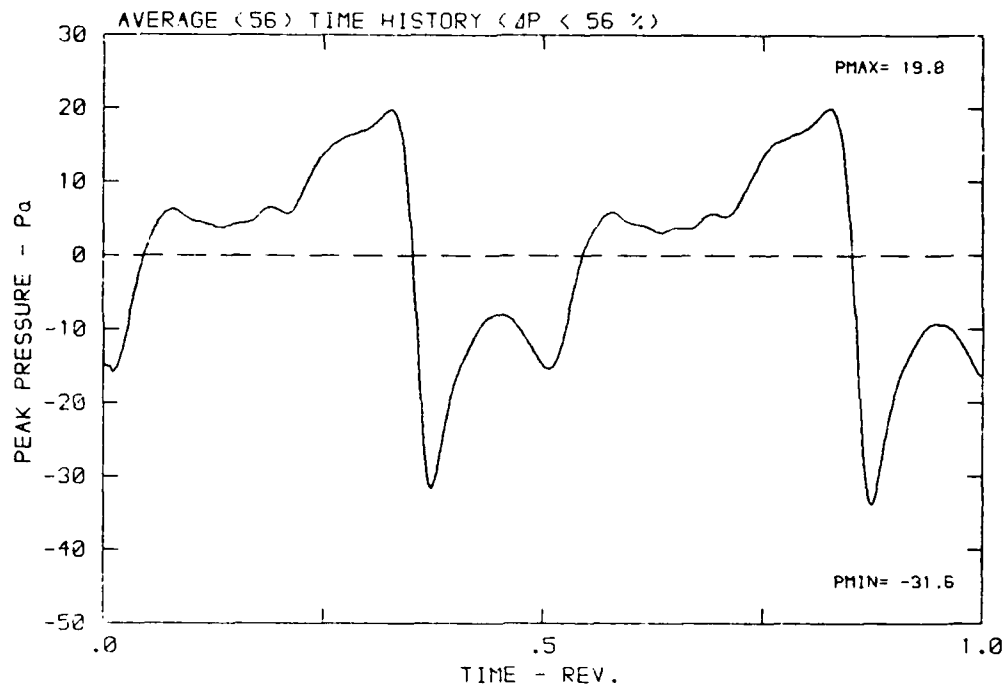
$\beta$ : 19.9° MH: .7659 n: 2400 rpm  $v/u$ : .203  $\phi$ : .0° T: 287.3 K





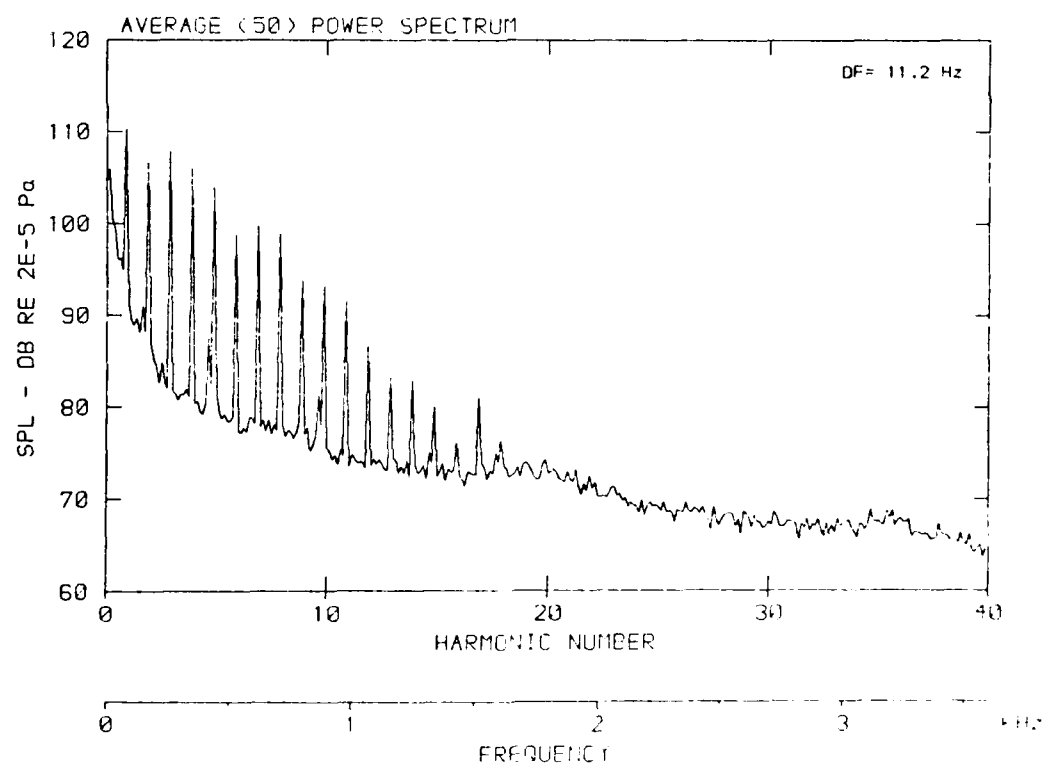
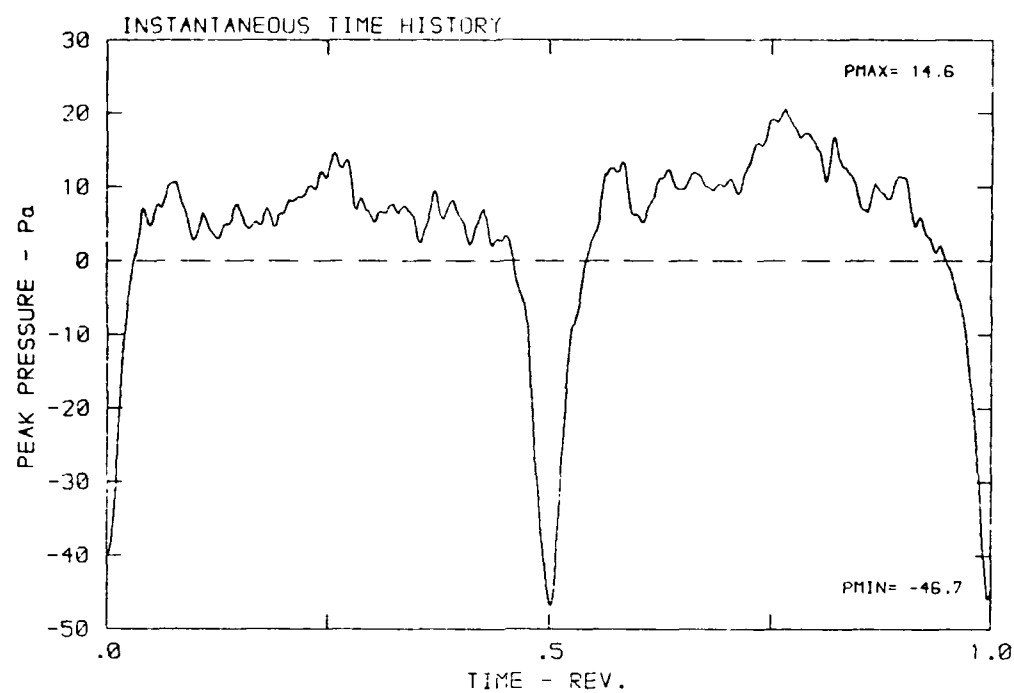
DATA POINT: FNC-8 RUN: 180 MP: 9

$\beta$ : 19.9° MH: .7659 n: 2400 rpm v/u: .203  $\phi$ : .0° T: 287.9 K



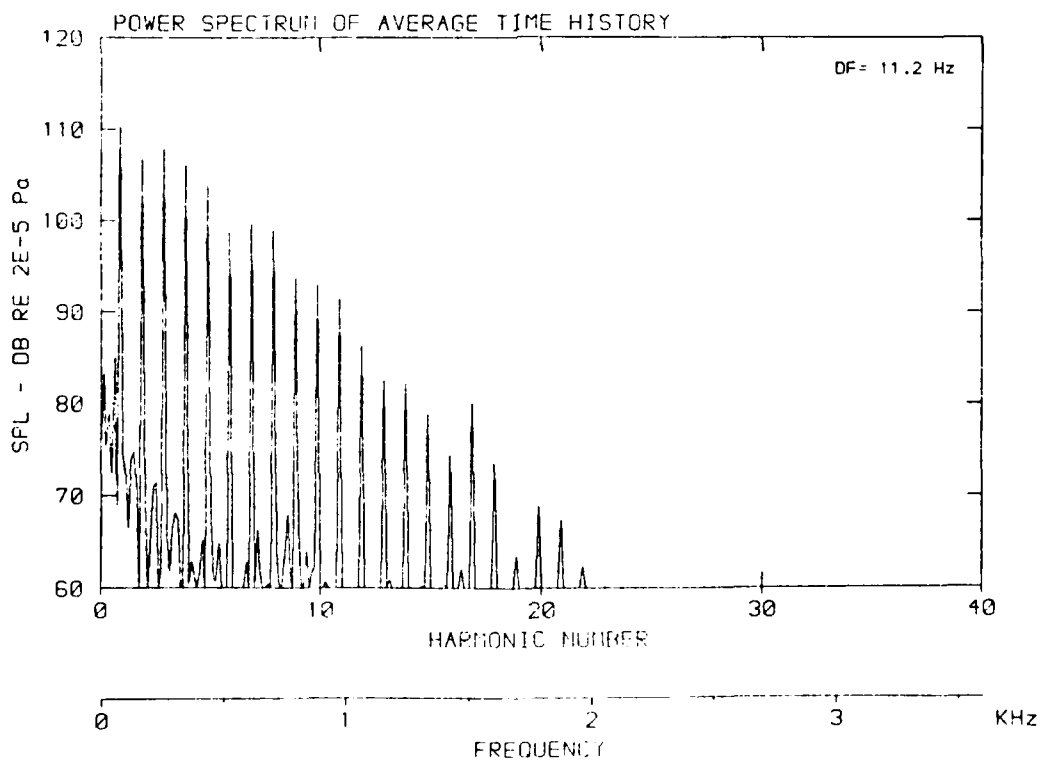
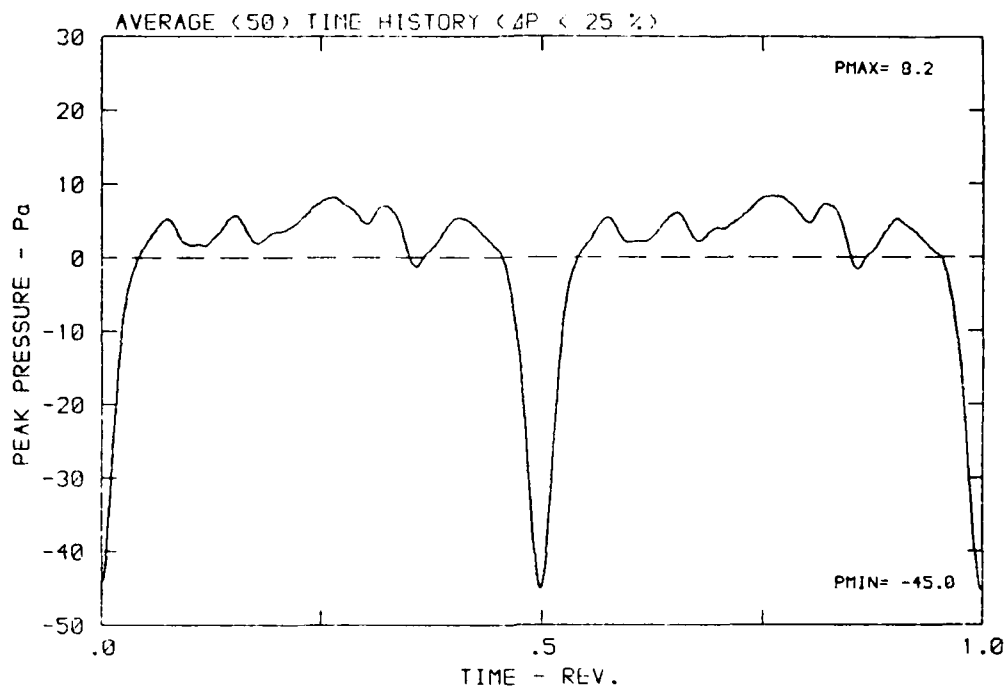
DATA POINT: FNC-9 RUN: 181 MP: 1

$\beta$ : 19.9° MH: .8734 n: 2700 rpm v/u: .268  $\phi$ : .0° T: 288.5 K



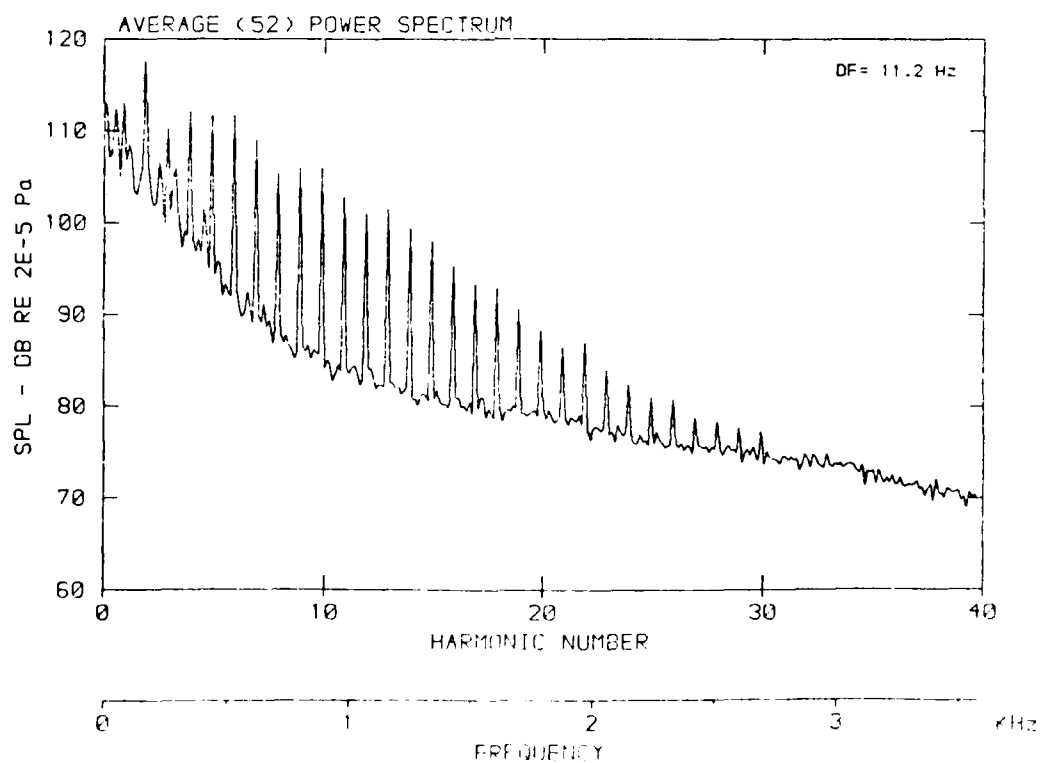
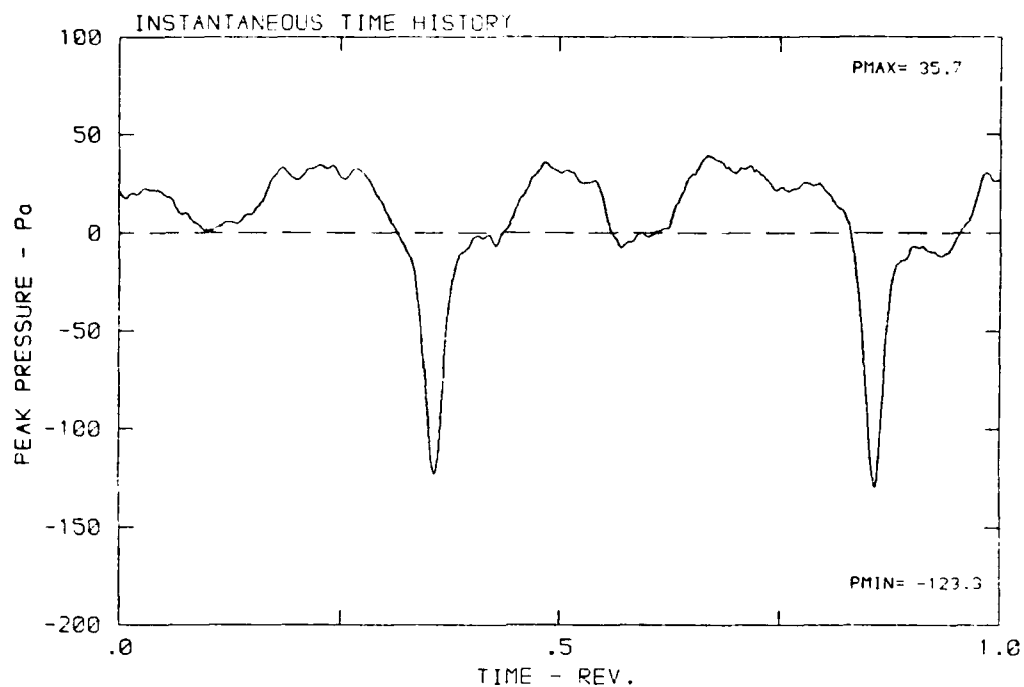
DATA POINT: FNC-9 RUN: 181 MP: 1

$\beta$ : 19.9° MH: .8734 n: 2700 rpm v/u: .268  $\phi$ : .0° T: 288.5 K



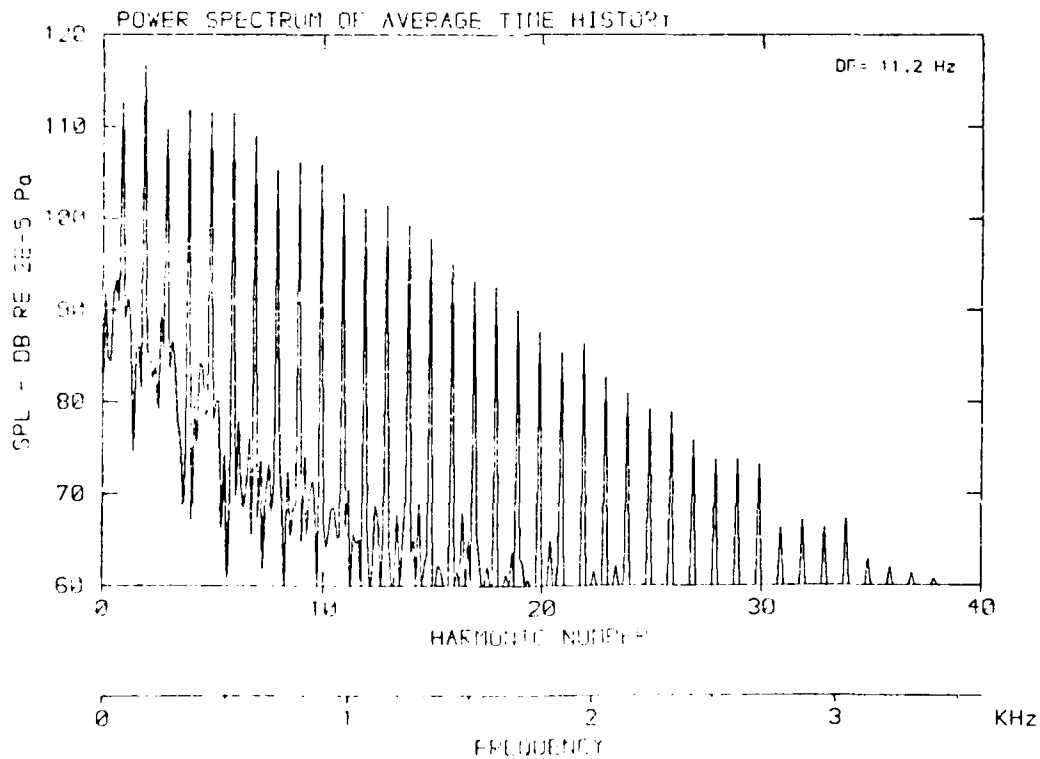
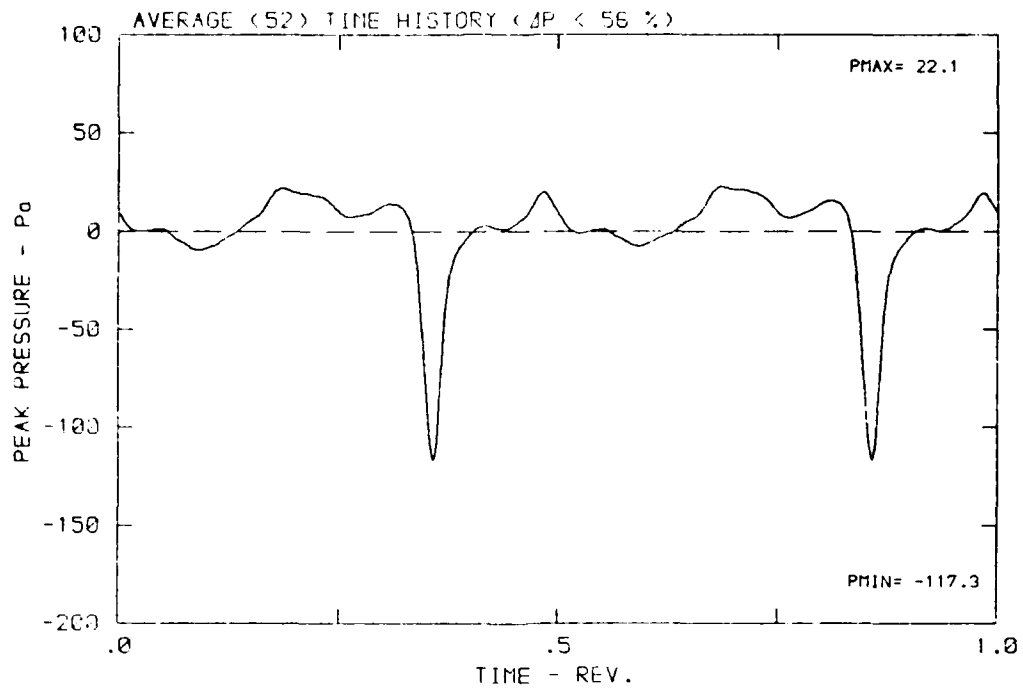
DATA POINT: FNC-9 FUN: 181 MP: 2

$\beta$ : 19.9° MH: .8734 n: 2700 rpm  $\nu$ : .268  $\phi$ : .0° T: 286.0 K



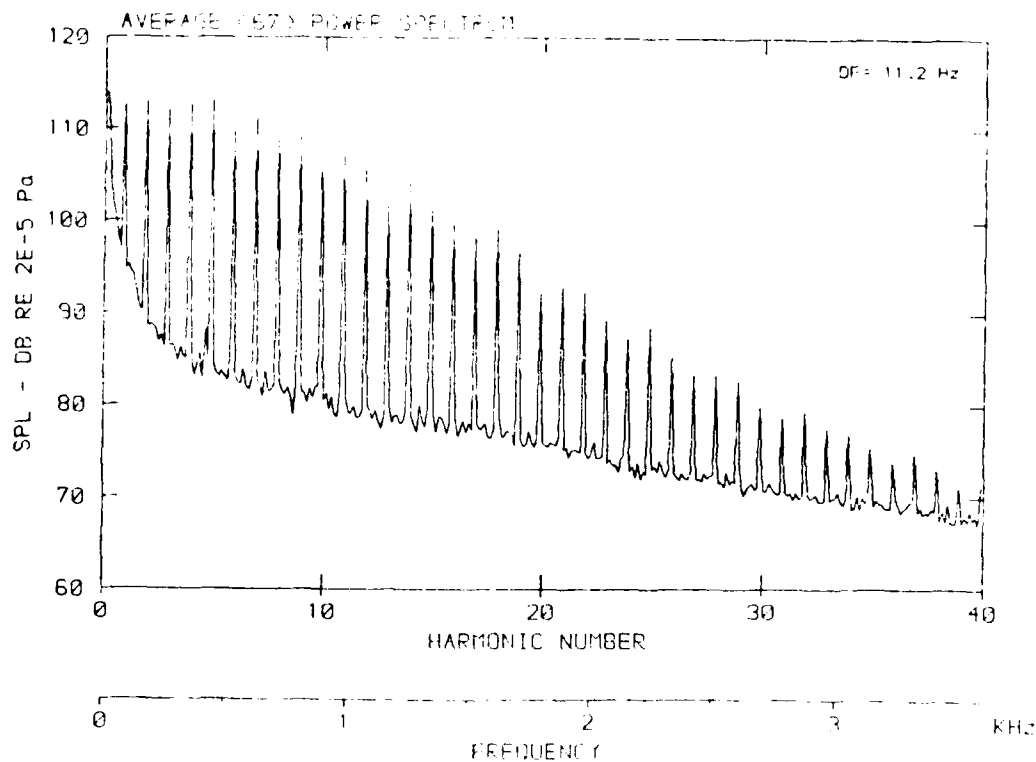
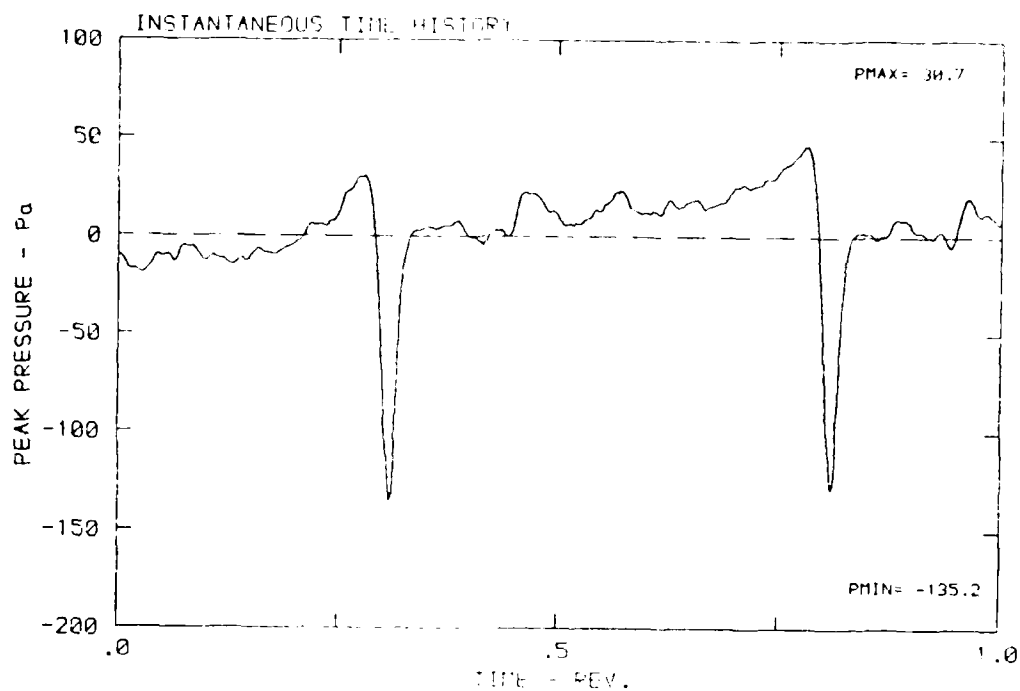
DATA POINT: FNC-9 RUN: 181 MP: 2

$\beta$ : 19.9° MH: .8734 n: 2700 rpm  $v/u$ : .268  $\phi$ : .0° T: 288.5 K



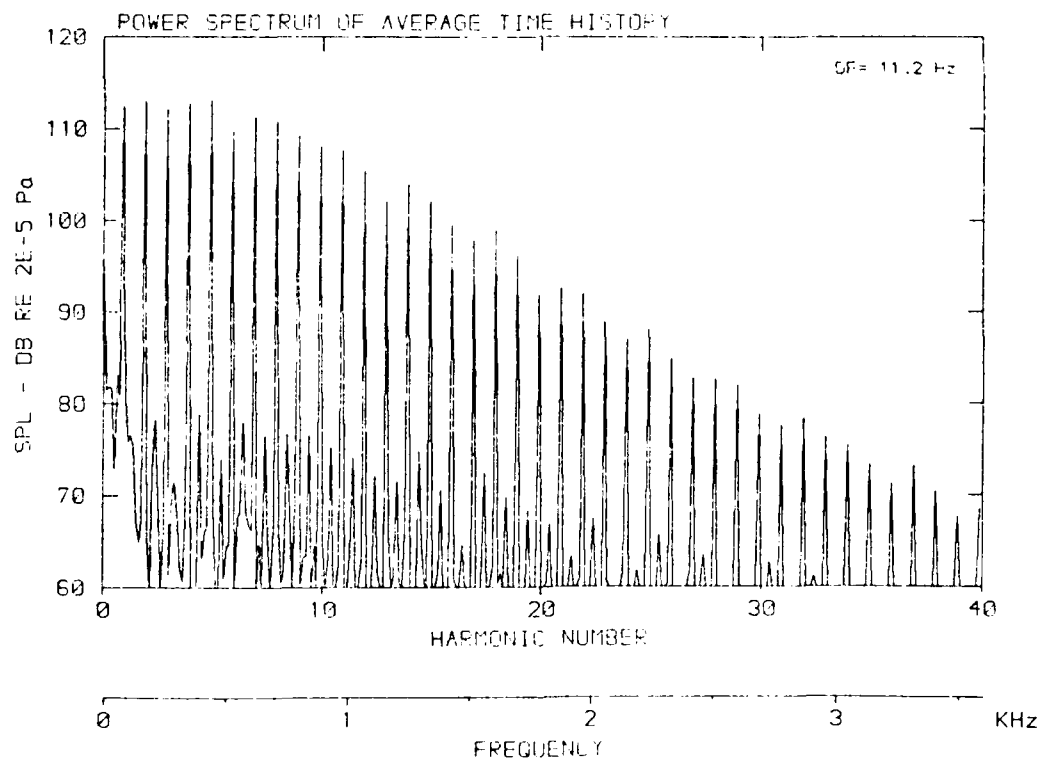
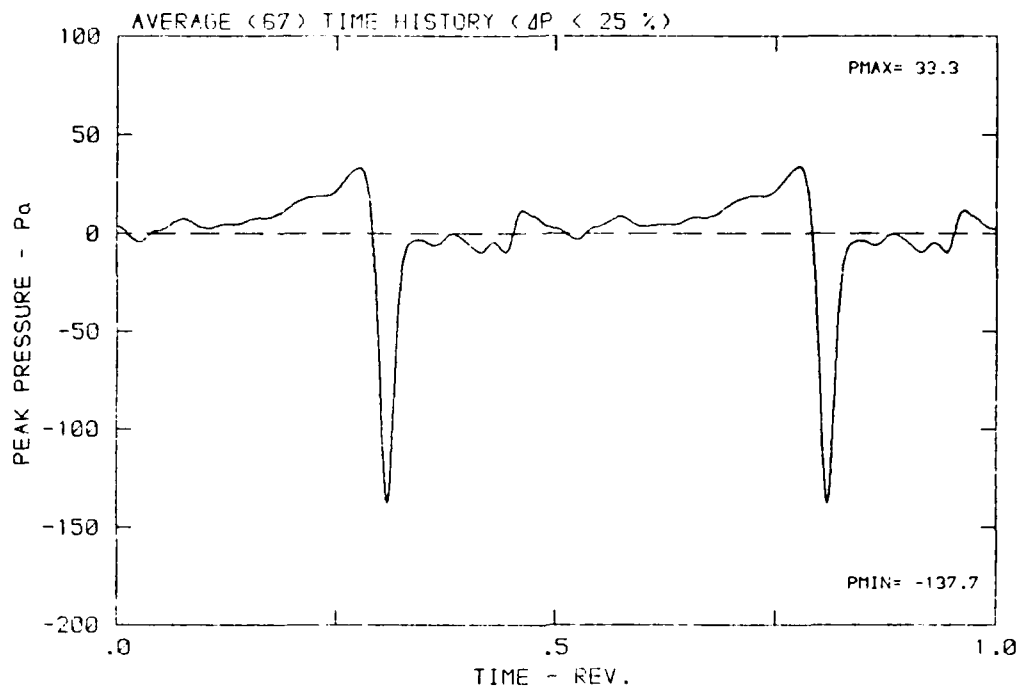
DATA POINT: ENC-5 RUN: 181 MF: 3

$\beta$ : 19.9° MH: .8734 n: 2700 rpm v/u: .208  $\phi$ : .0° T: 268.1



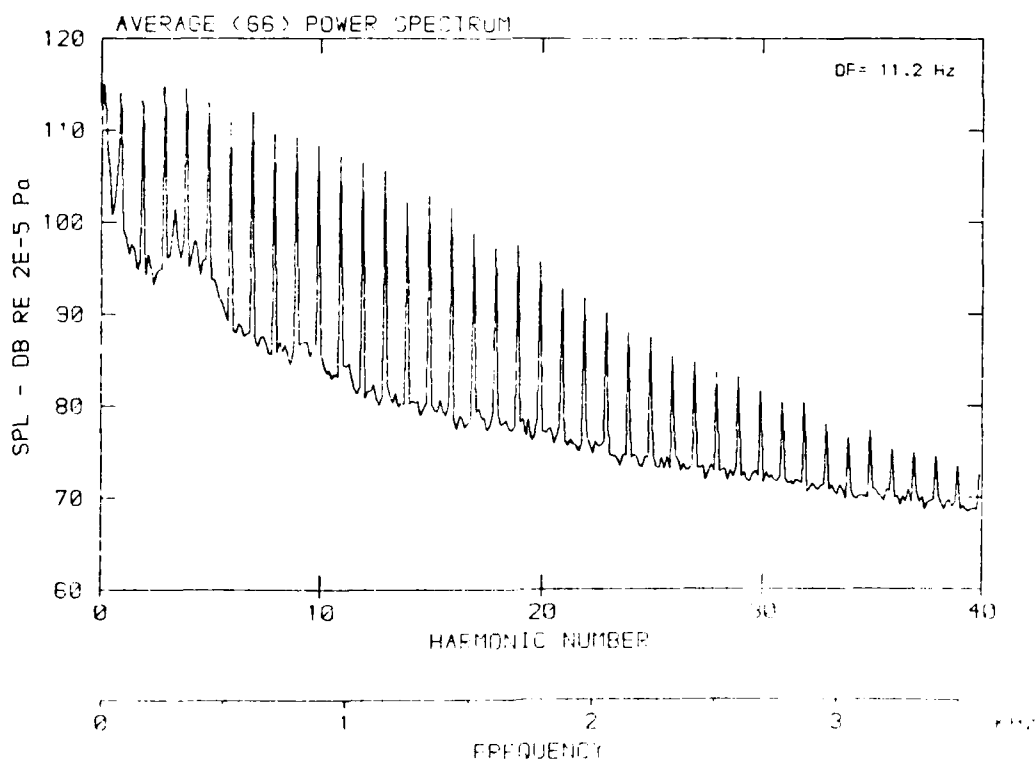
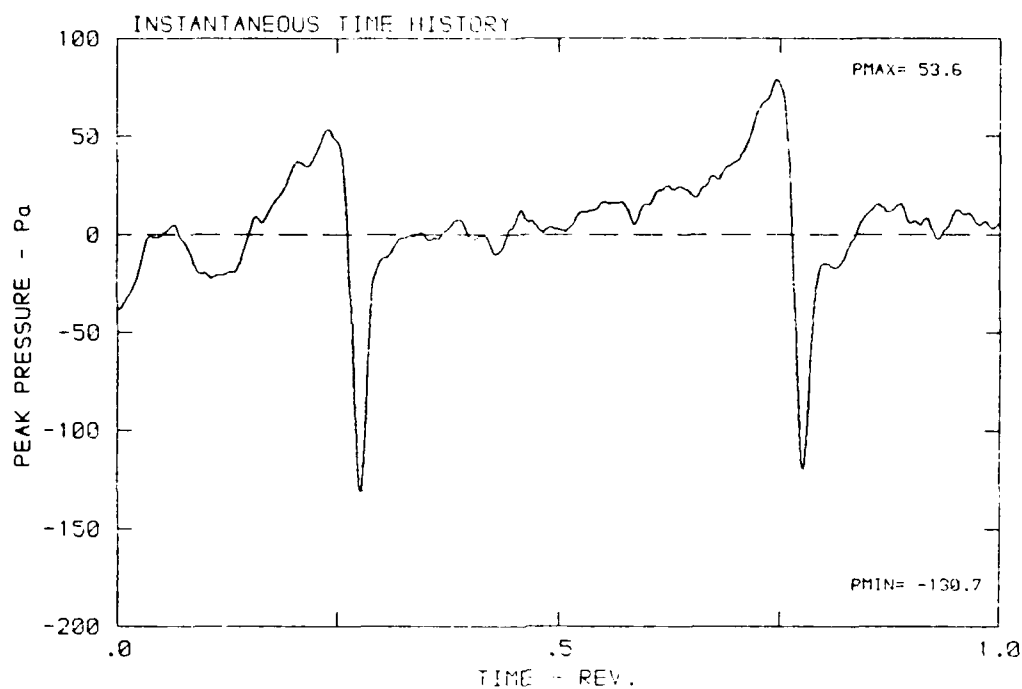
DATA POINT: FNC-9 RUN: 181 MP: 3

$\beta$ : 19.9° MH: .8734 n: 2700 rpm  $v/u$ : .268  $\phi$ : .0° T: 288.5 K



DATA POINT: FNC-9 RUN: 181 MP: 4

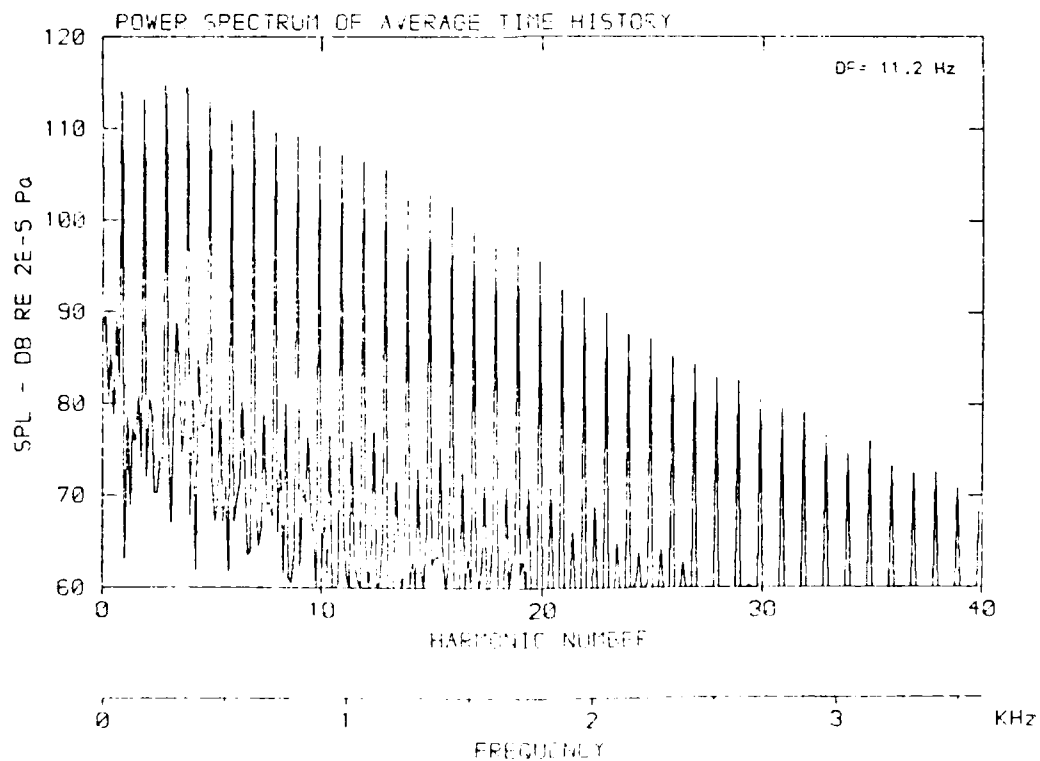
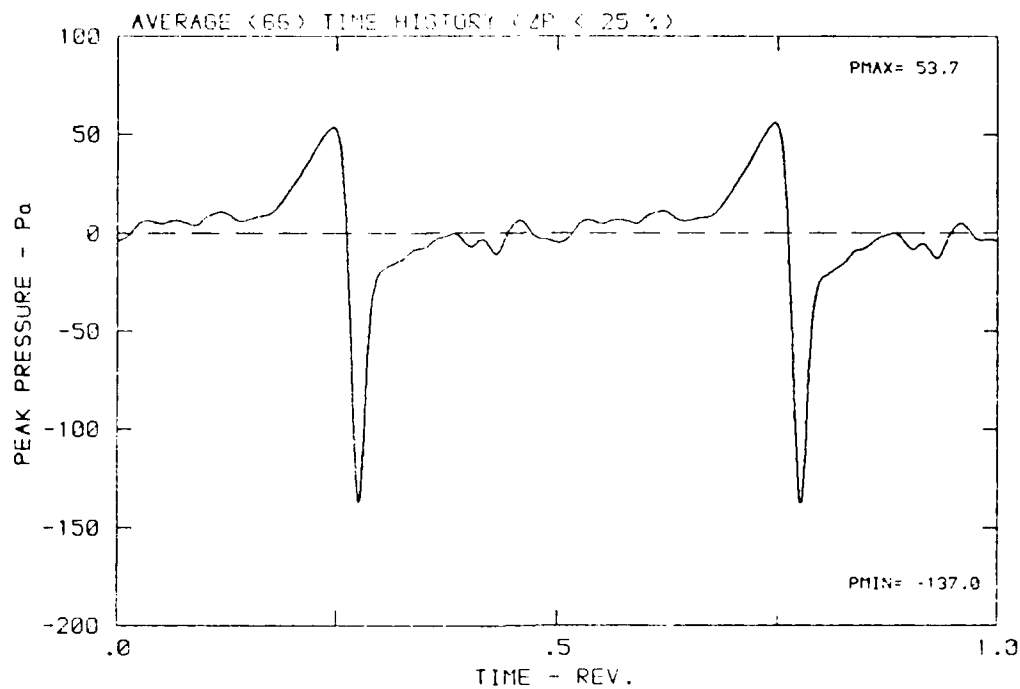
$\beta$ : 19.9° MH: .8734 n: 2700 rpm  $v/u$ : .265  $\phi$ : .0° T: 288.5 K





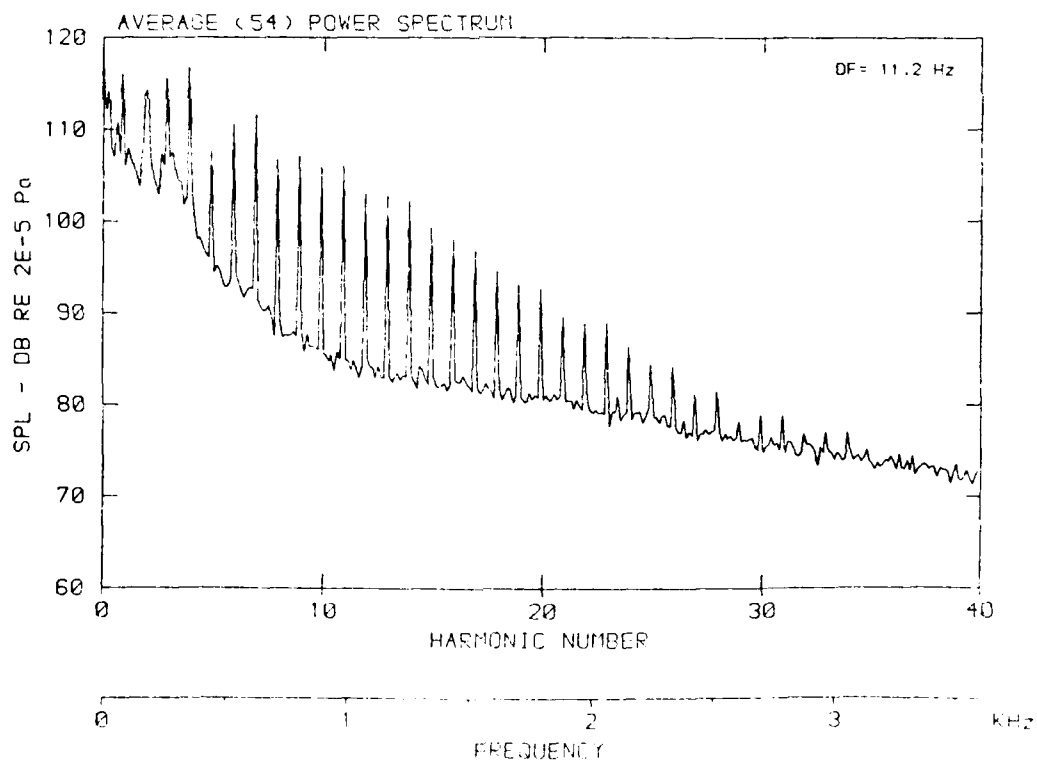
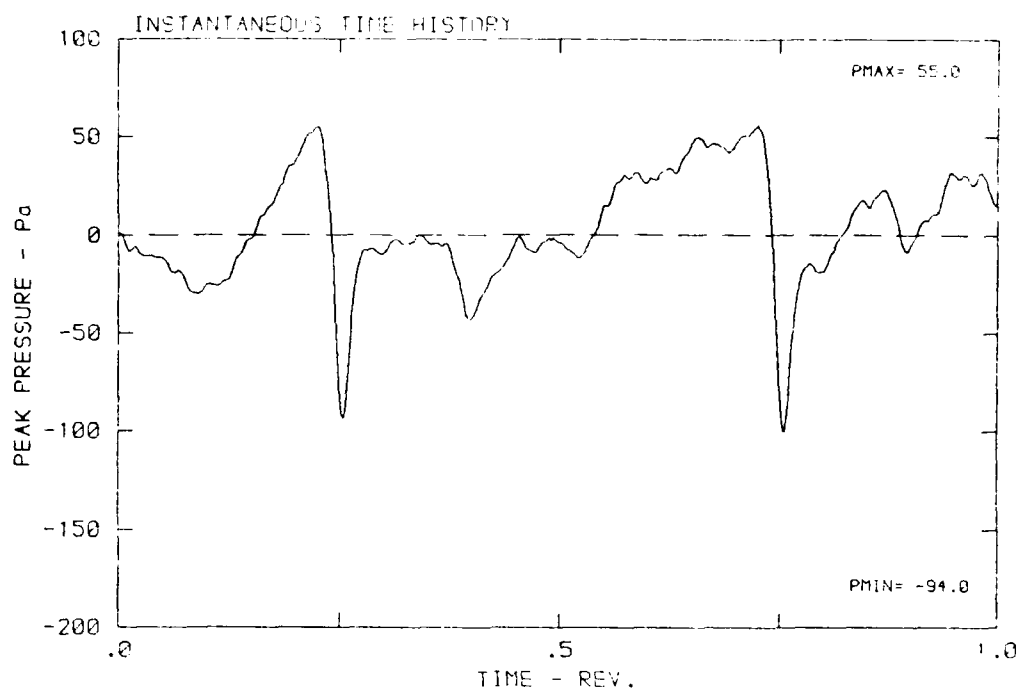
DATA POINT: FNC-9 RUN: 181 MP: 4

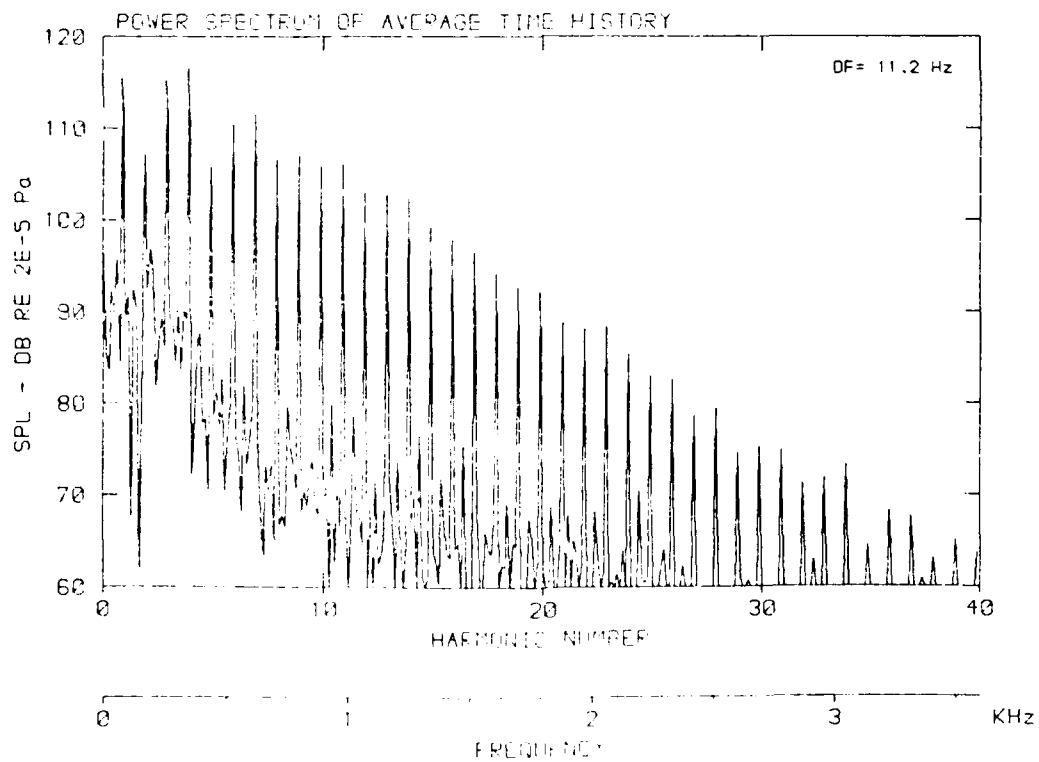
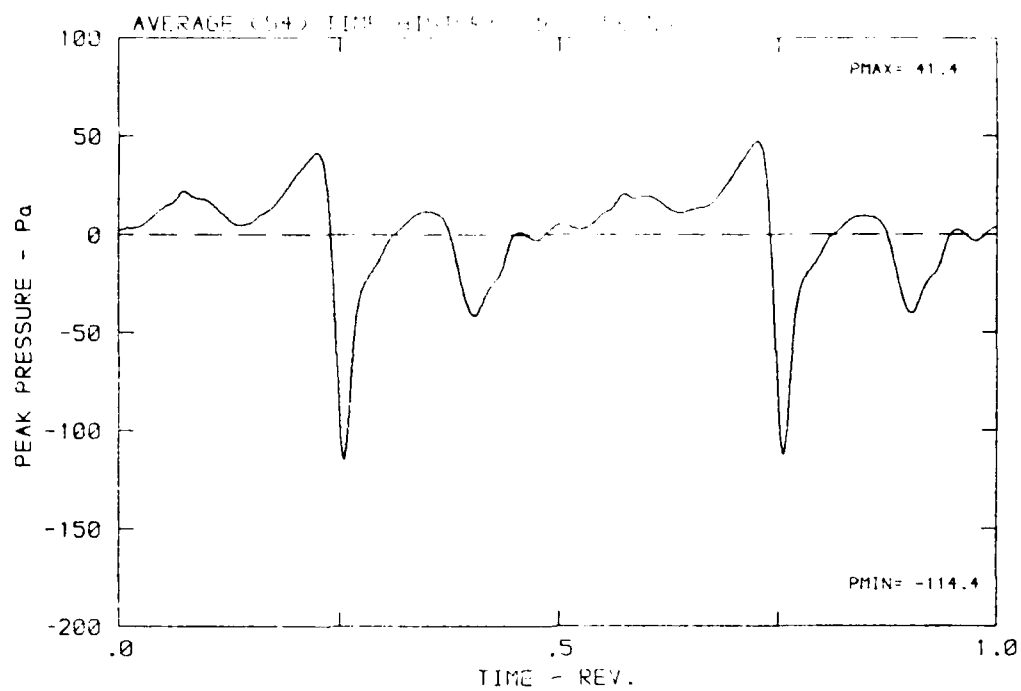
B: 19.9° NH: .8734 n: 2700 rpm v/u: .268  $\phi$ : .0° T: 288.5 K



DATA POINT: FNC-9 RUN: 181 MF: 5

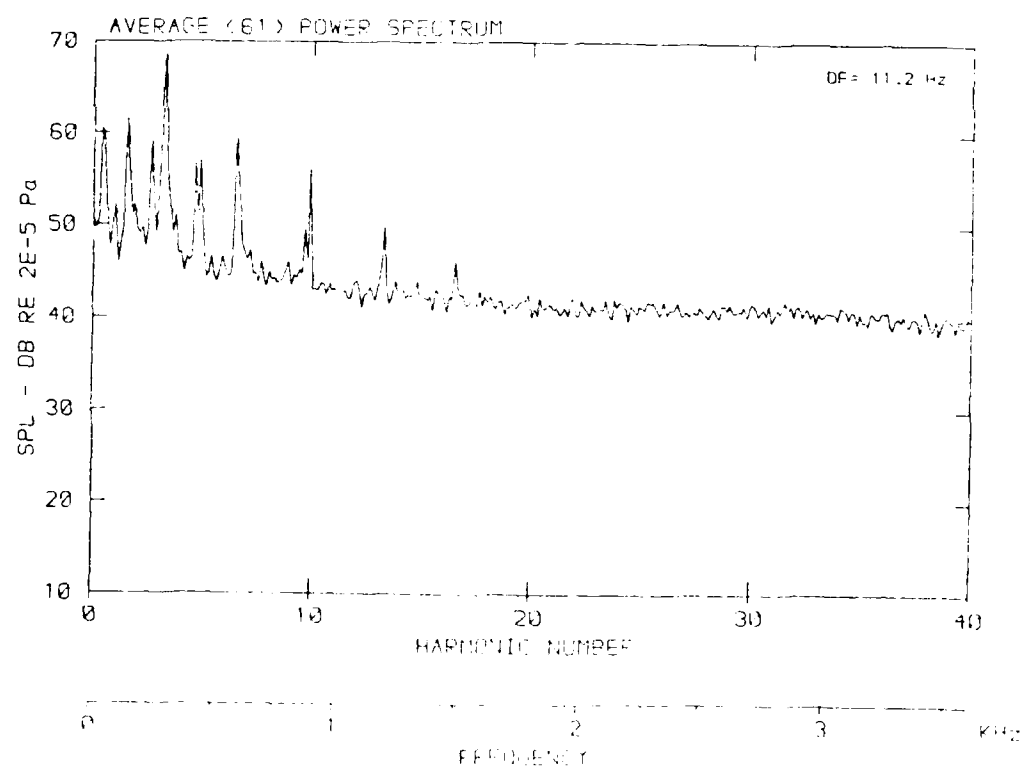
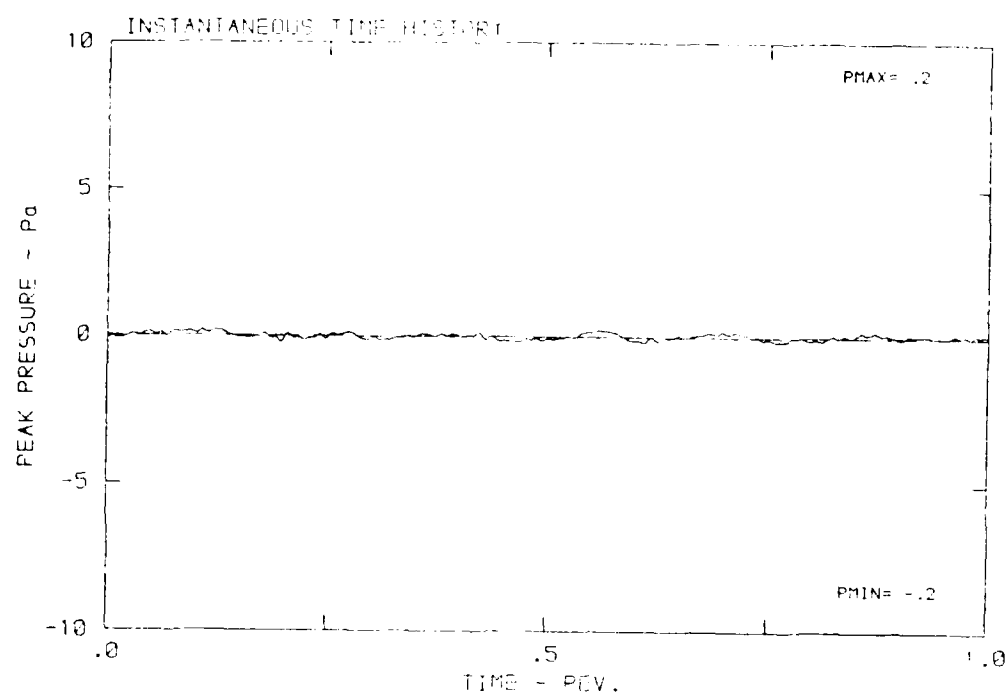
$\beta$ : 19.9° MH: .8734 n: 2700 rpm  $\nu$ : .263  $\phi$ : .0° T: 298.7 K



$$\beta: 19.9^{\circ} \quad \text{MH: } .8734 \quad n: 234.9 \text{ g/mol} \quad d: 1.136 \text{ g/cm}^3 \quad q: .00^{\circ} \quad \text{IR: } 1683.5 \text{ cm}^{-1}$$


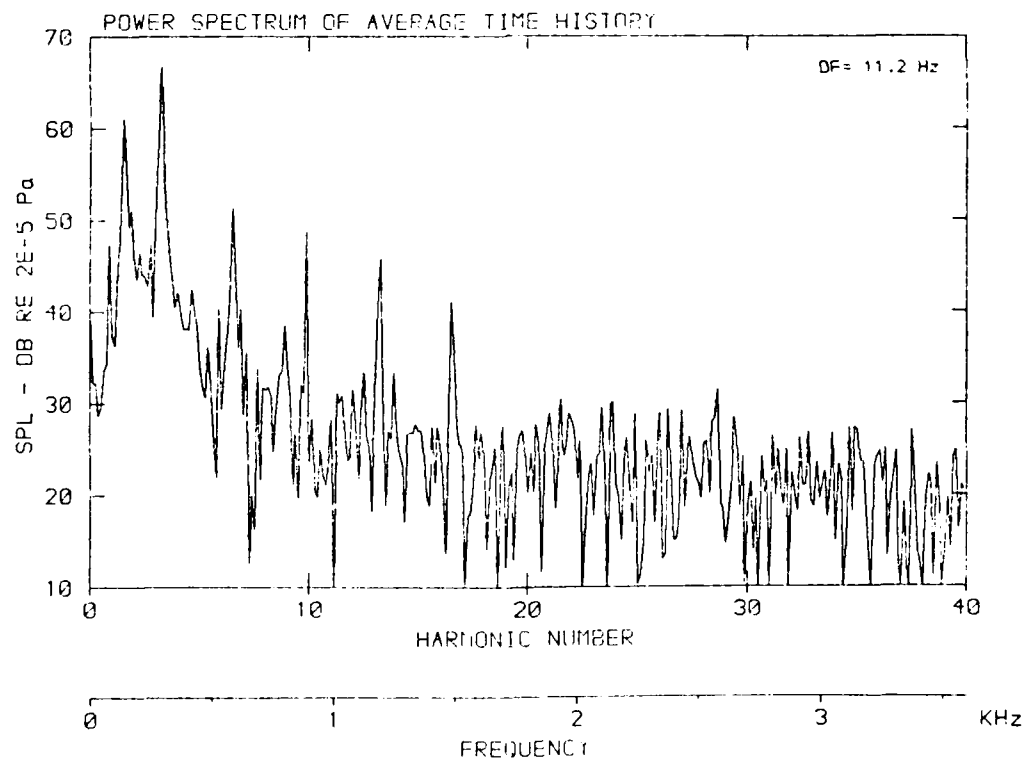
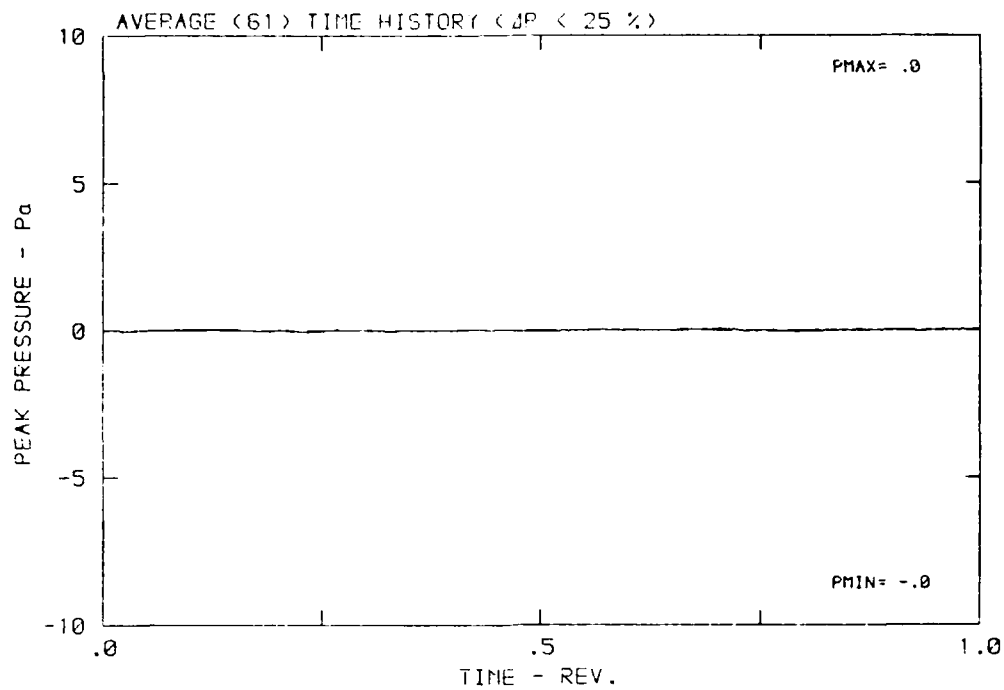
DATA POINT: ENC-9 RUN: 181 MP: 6

$\beta$ : 19.9° MH: .8734  $\alpha$ : 270.0  $\phi$ : .268  $\psi$ : .00° I: 388.5



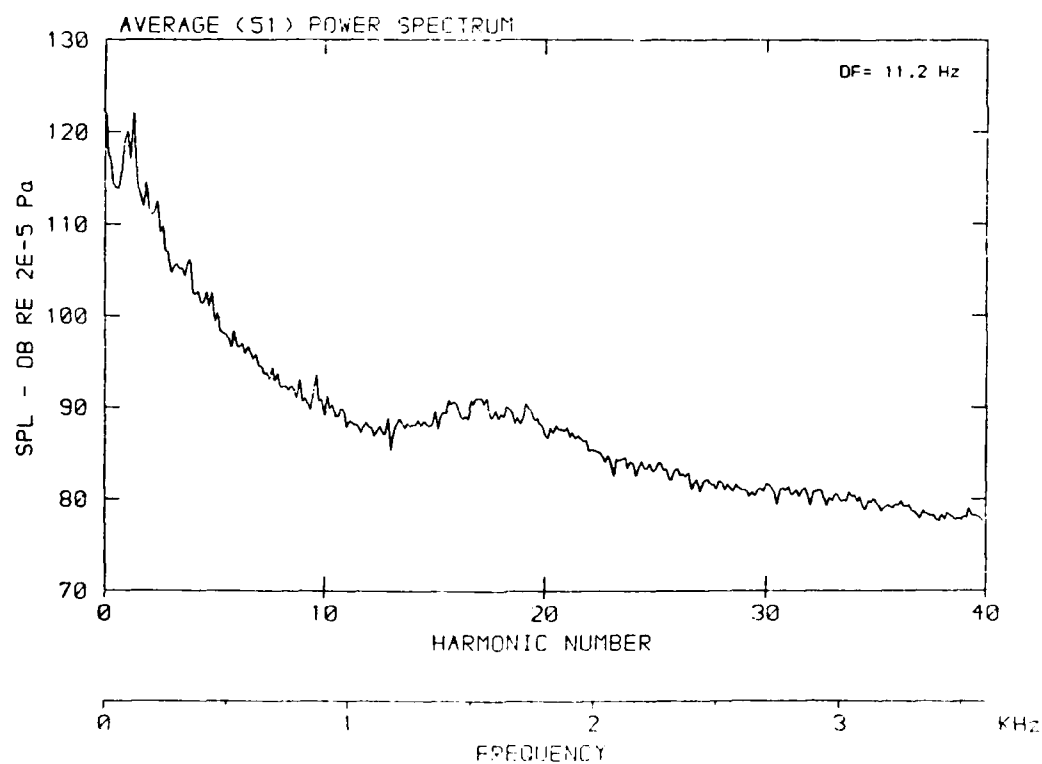
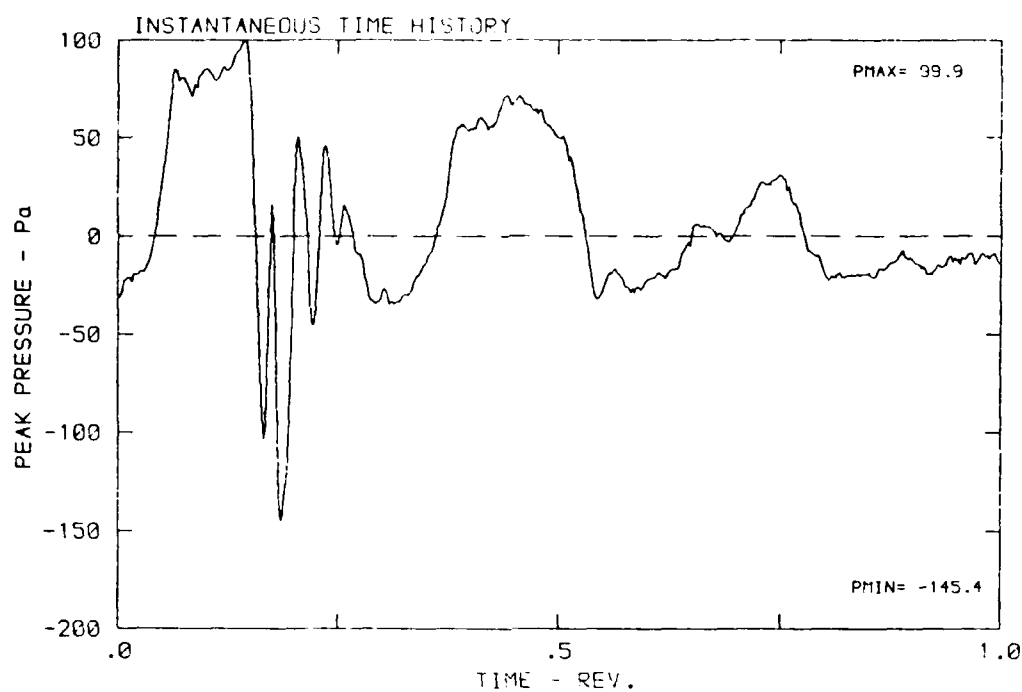
DATA POINT: FNC-9 RUN: 181 MP: 6

$\beta$ : 19.9° MH: .8734 n: 2700 rpm  $v/u$ : .268  $\phi$ : .0° T: 288.5 K



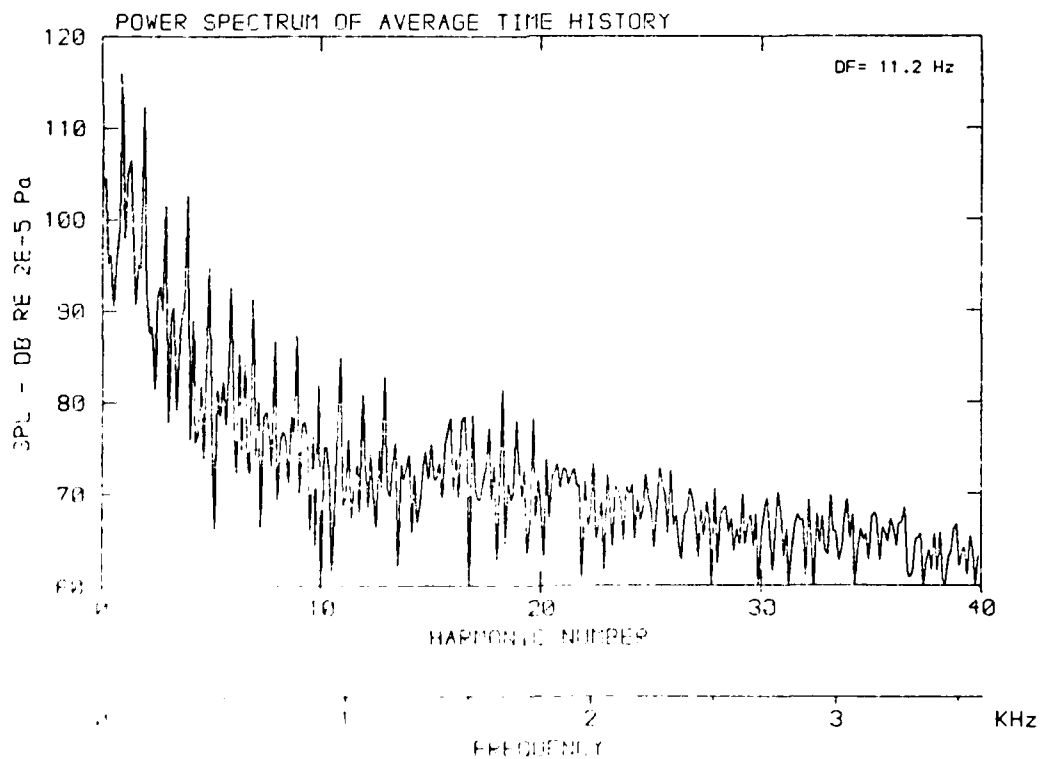
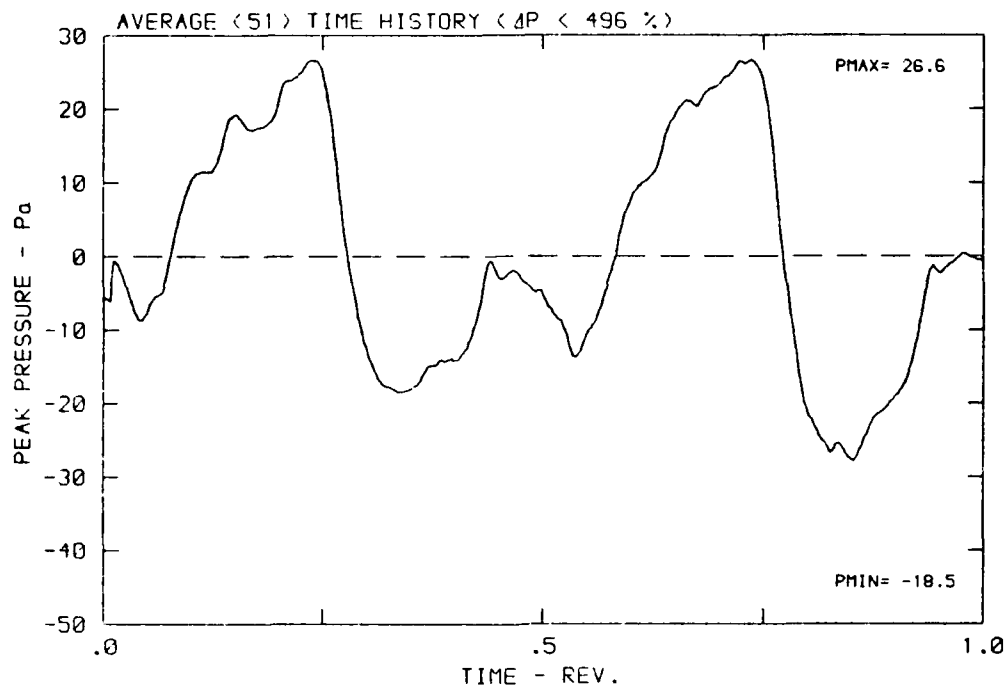
DATA POINT: FNC-8 RUN: 181 MP: 7

$\beta$ : 19.9° MH: .9734 n: 2700 rpm  $\nu/\alpha$ : .268  $\phi$ : .0° T: 293.5 K



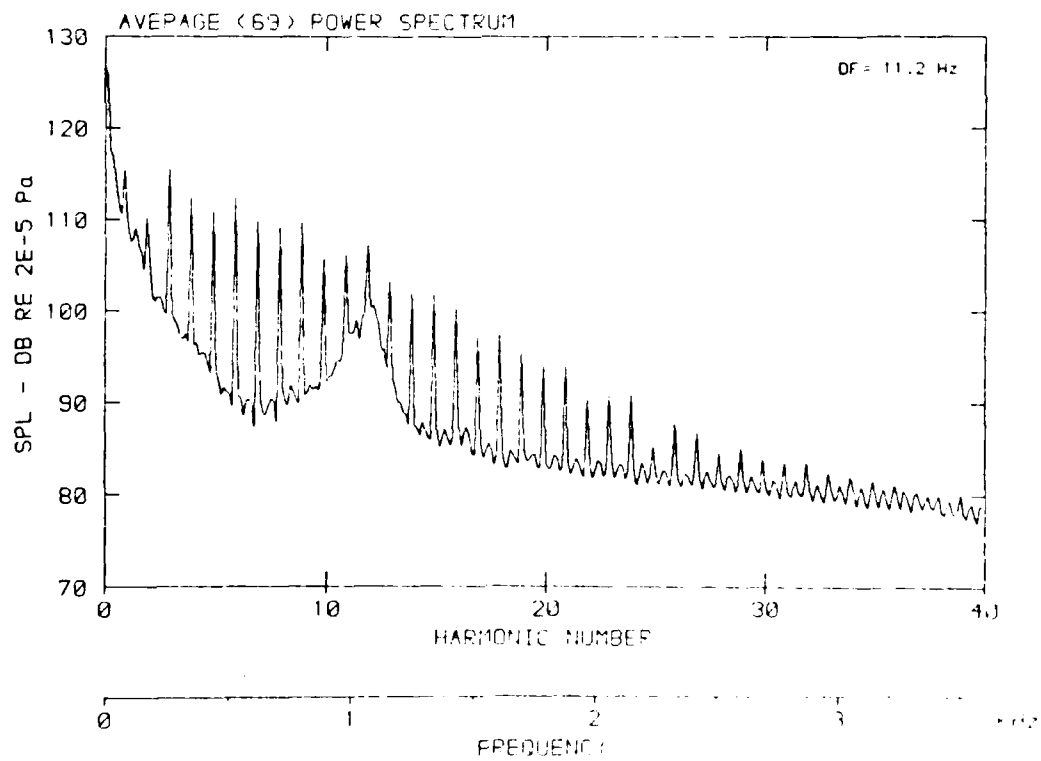
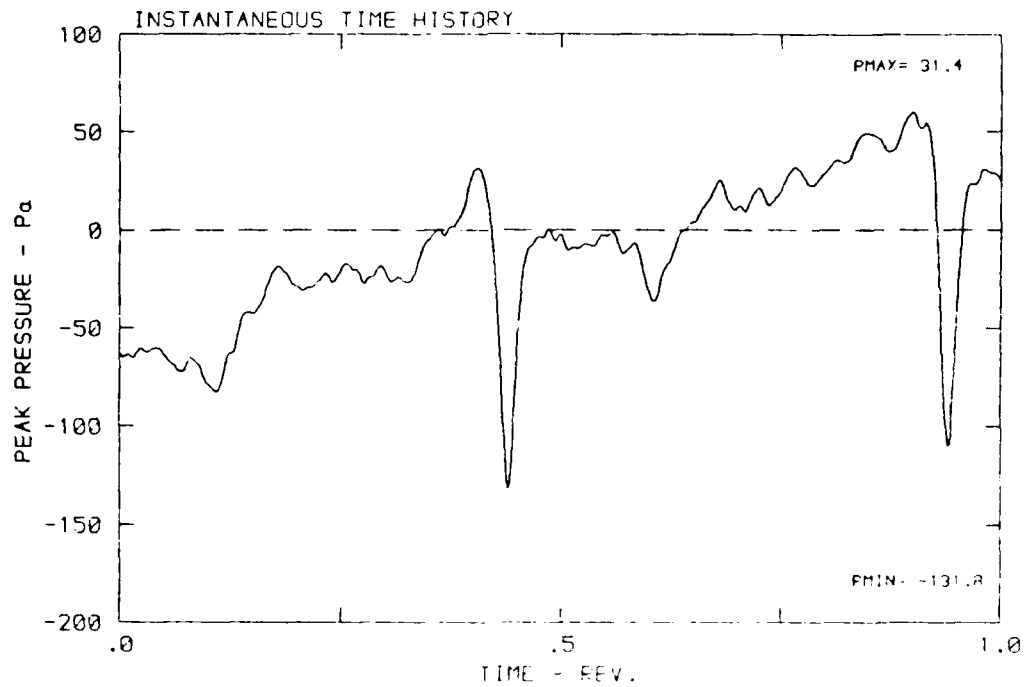
DATA POINT: FNC-9 RUN: 181 MP: 7

$\beta$ : 19.9° MH: .8734 n: 2700 rpm v/u: .268  $\phi$ : .0° T: 288.5 K



DATA POINT: FNC-9 RUN: 181 MF: E

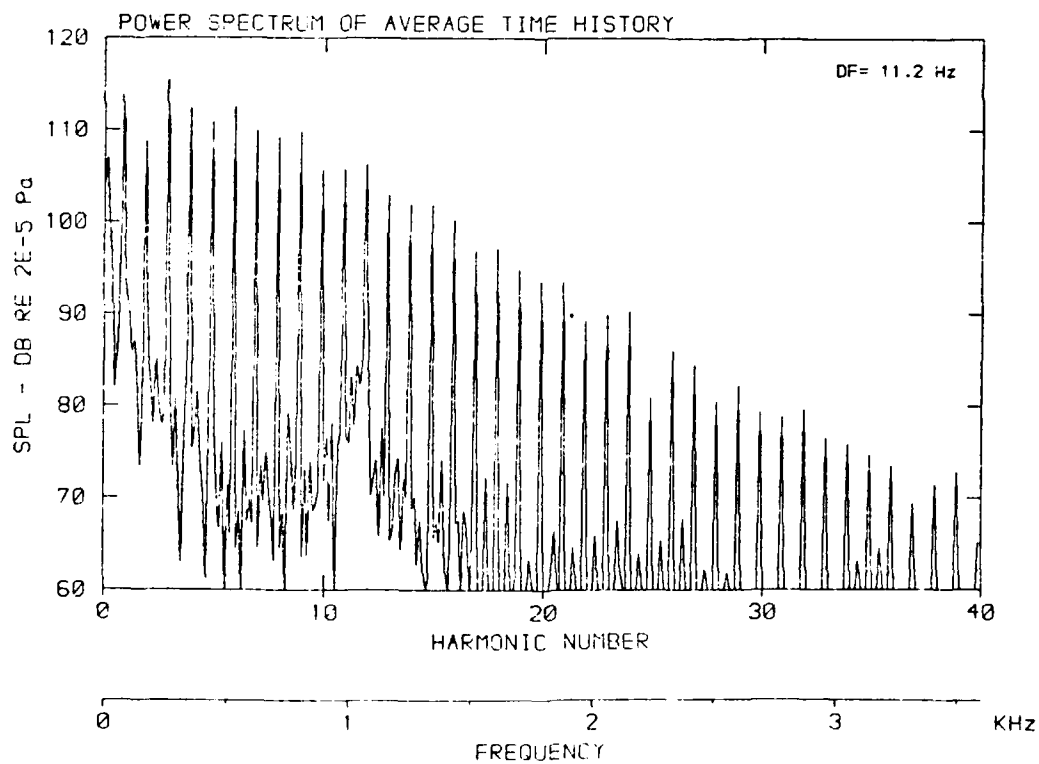
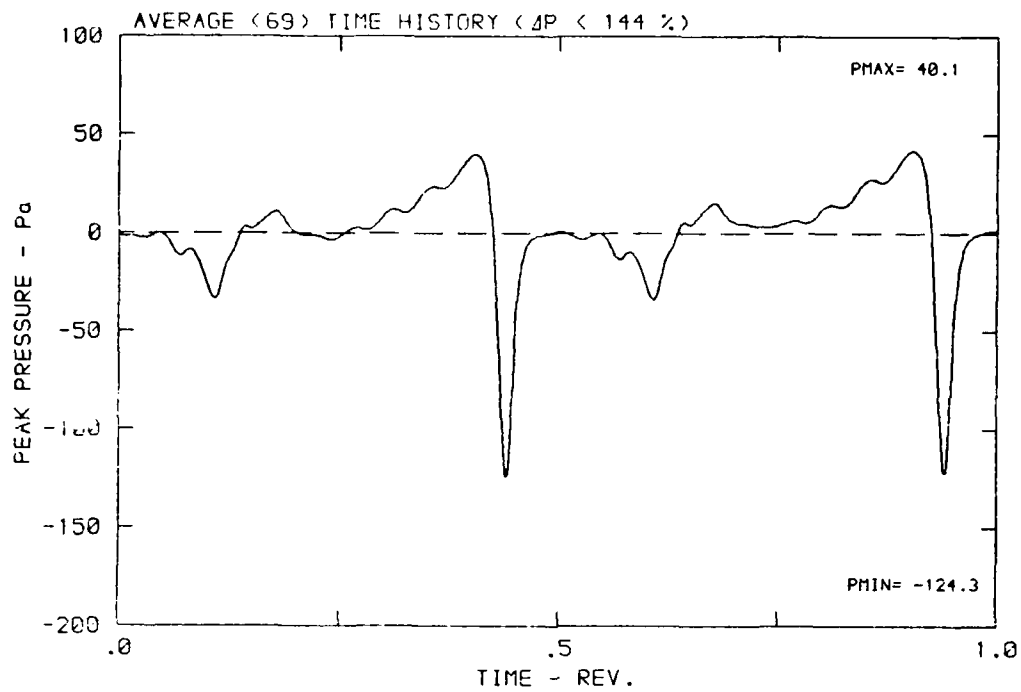
$\beta$ : 19.9° MH: .8734 n: 2700 rpm  $v/u$ : .268  $\phi$ : .0° T: 293.5 K





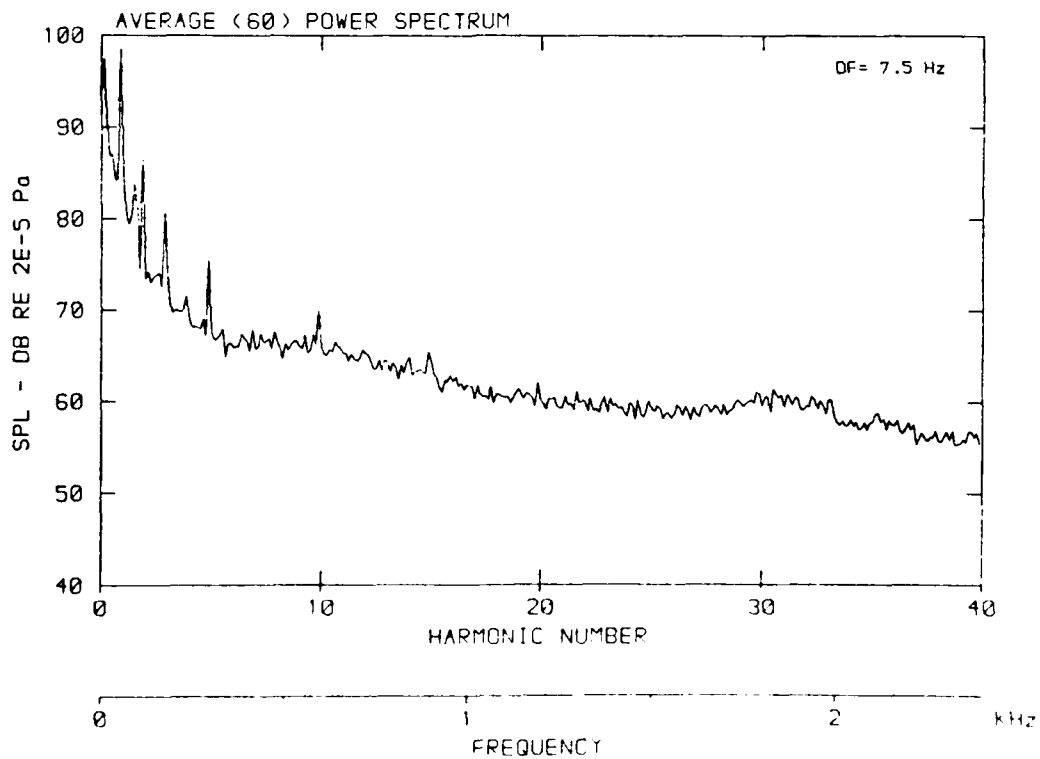
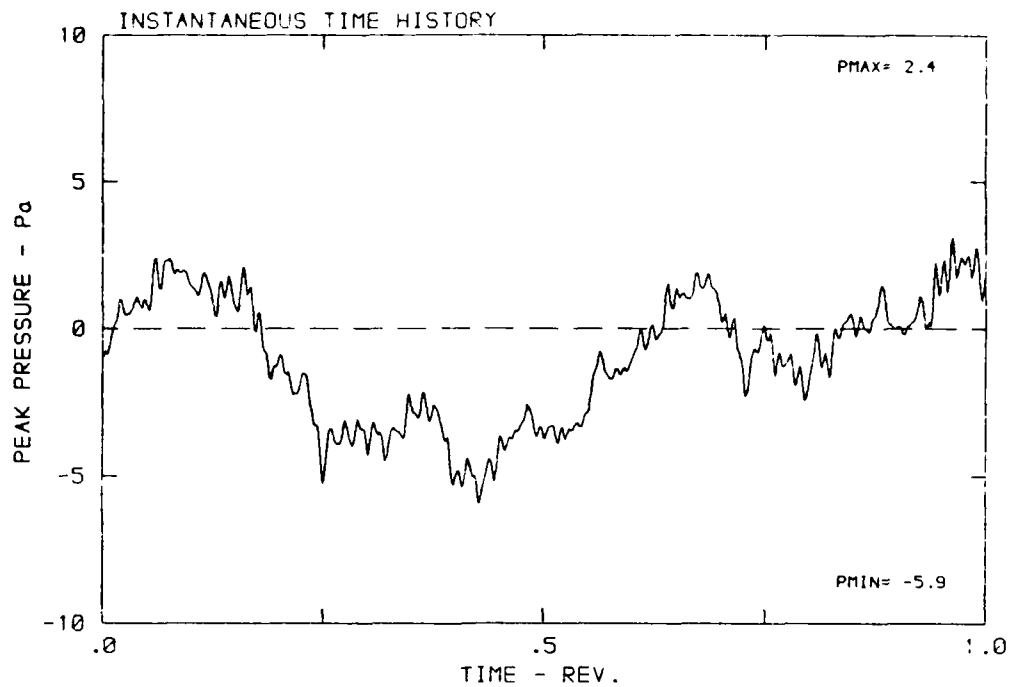
DATA POINT: FNC-9 RUN: 181 MP: 9

$\beta$ : 19.9° MH: .8734 n: 2700 rpm v/u: .268  $\phi$ : .0° T: 288.5 K



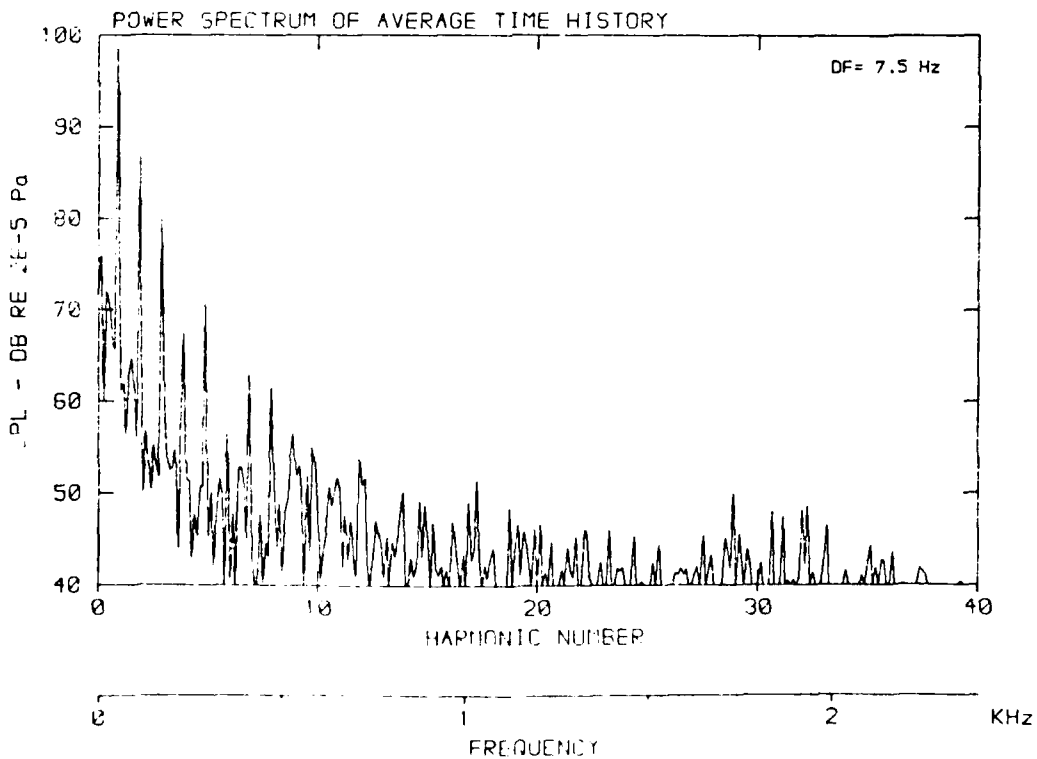
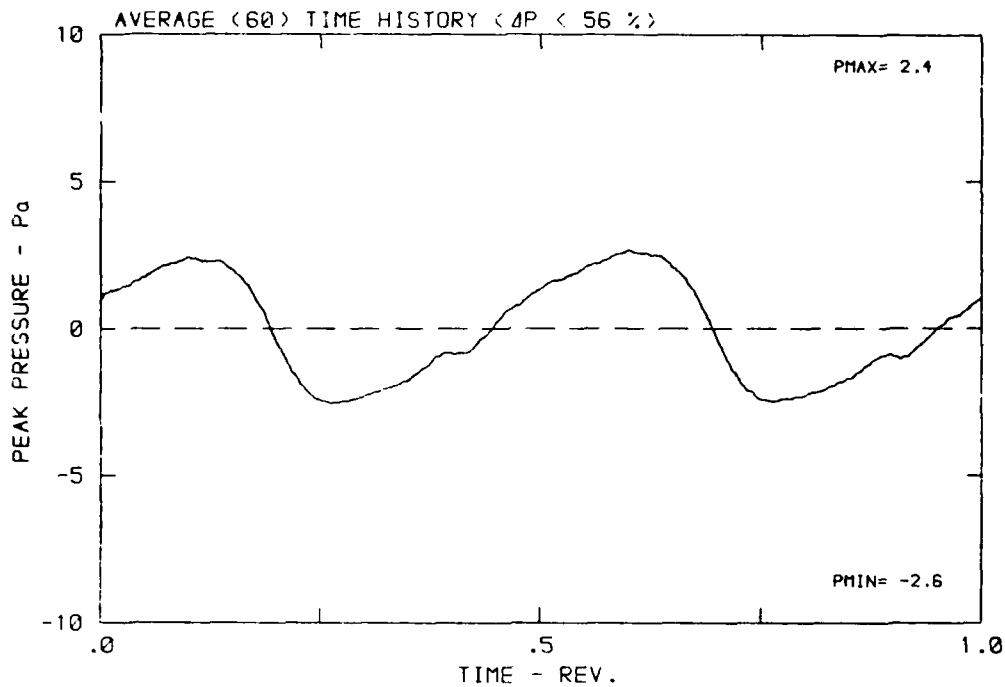
DATA POINT: FNC-10 RUN: 182 MP: 1

$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .267  $\phi$ : .0° T: 287.6 K



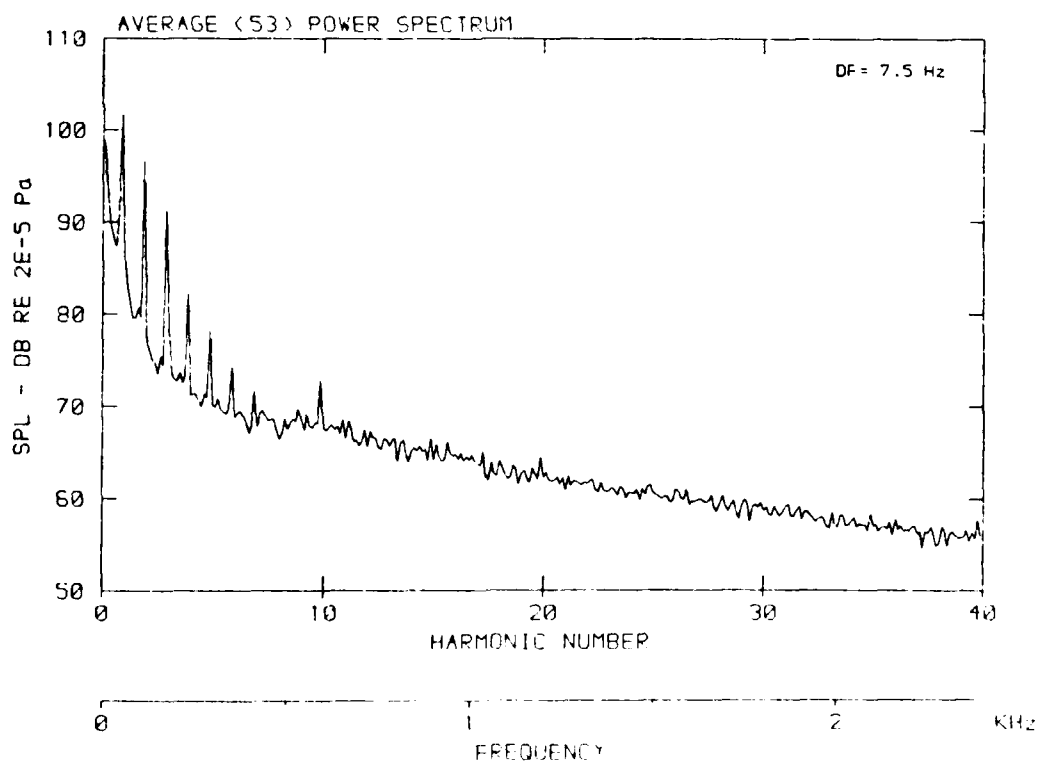
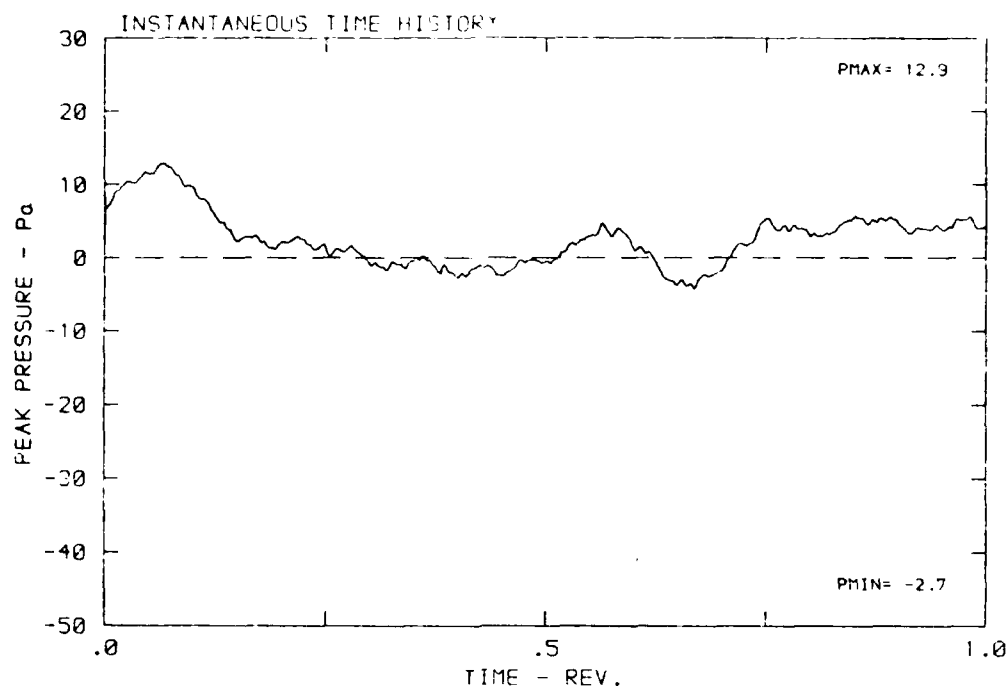
DATA POINT: FNC-10 RUN: 182 MP: 1

$\beta$ : 23.7° MH: .5830 n: 1800 rpm v/u: .267  $\phi$ : .0° T: 287.6 K



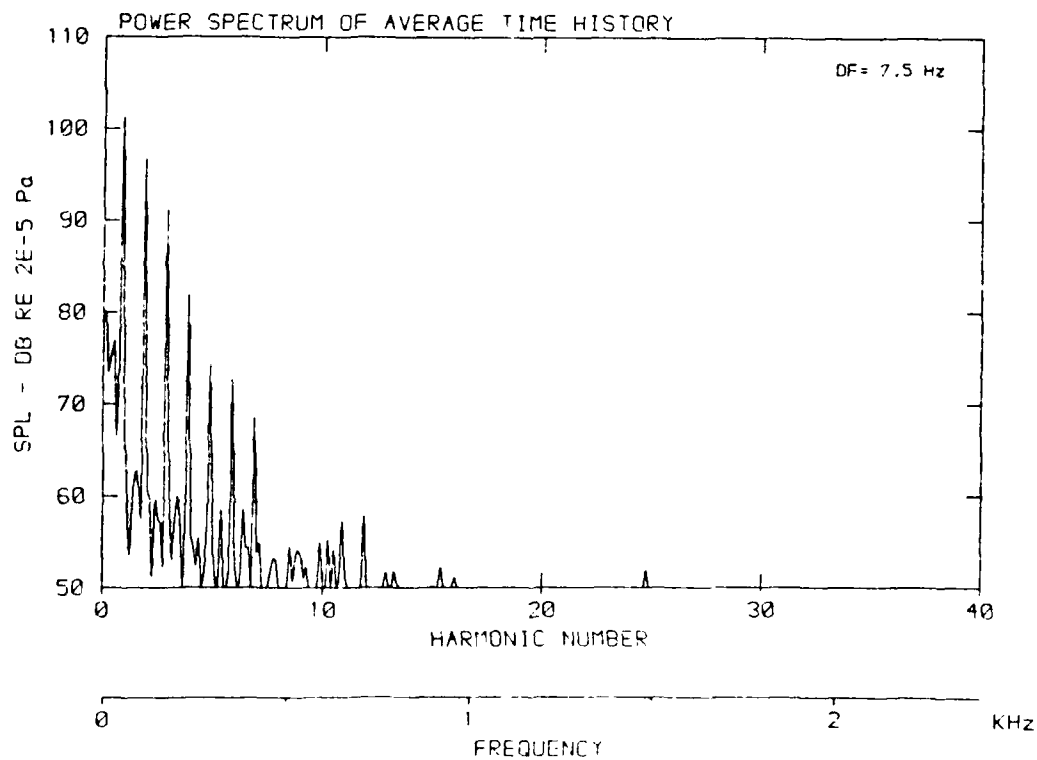
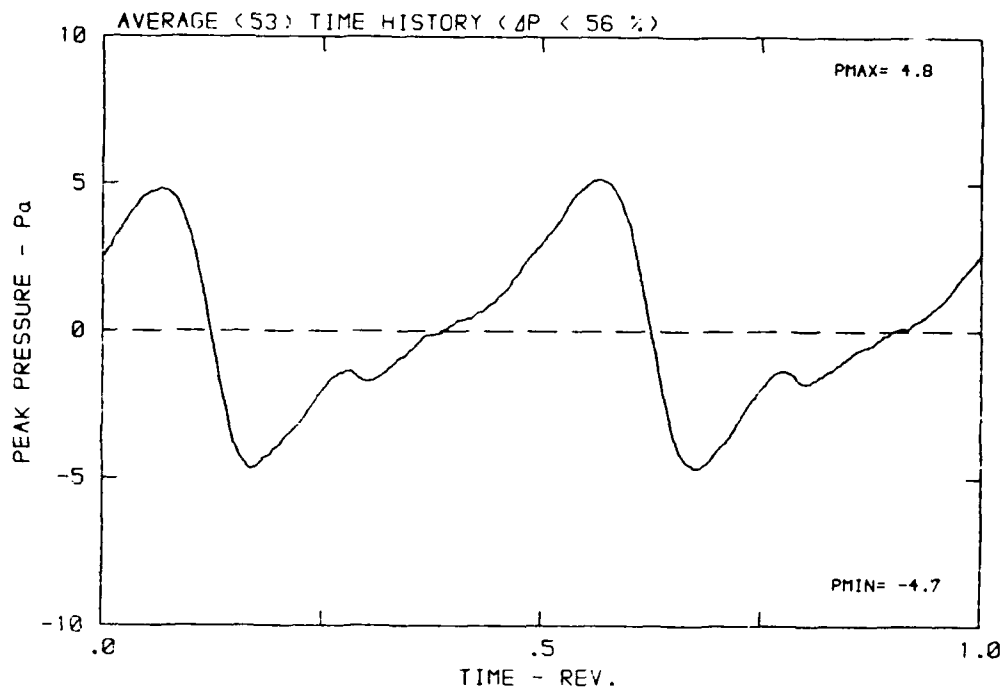
DATA POINT: ENC 10 RUN: 182 MF: 2

$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .257  $\phi$ : .0° T: 237.5 K



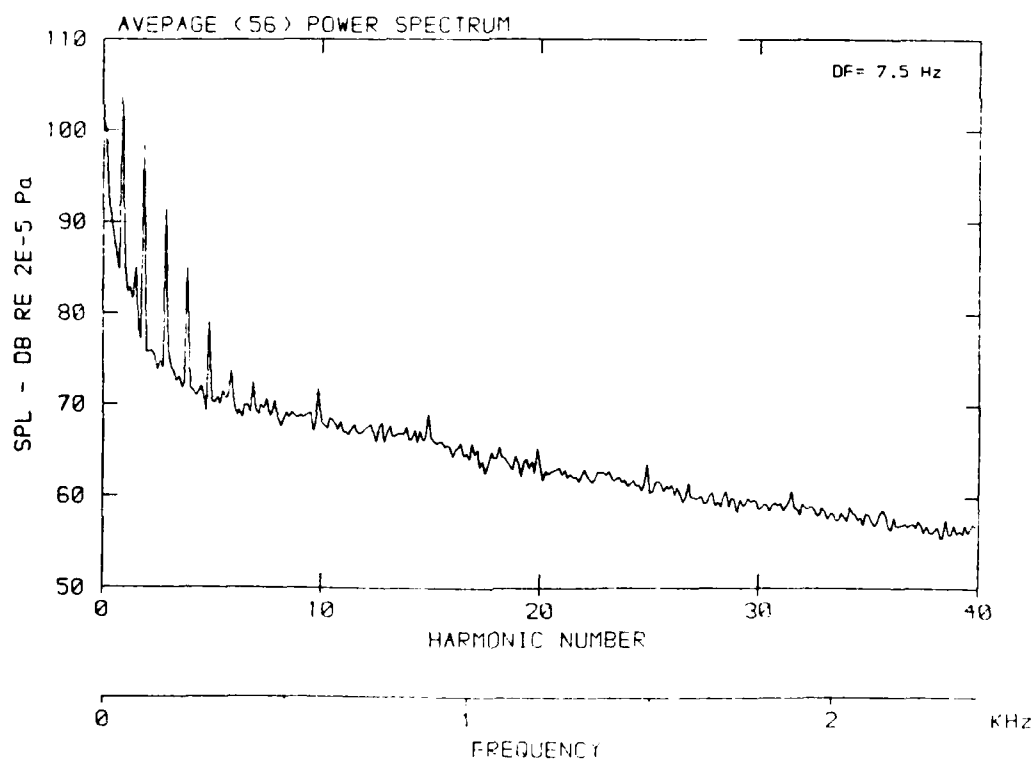
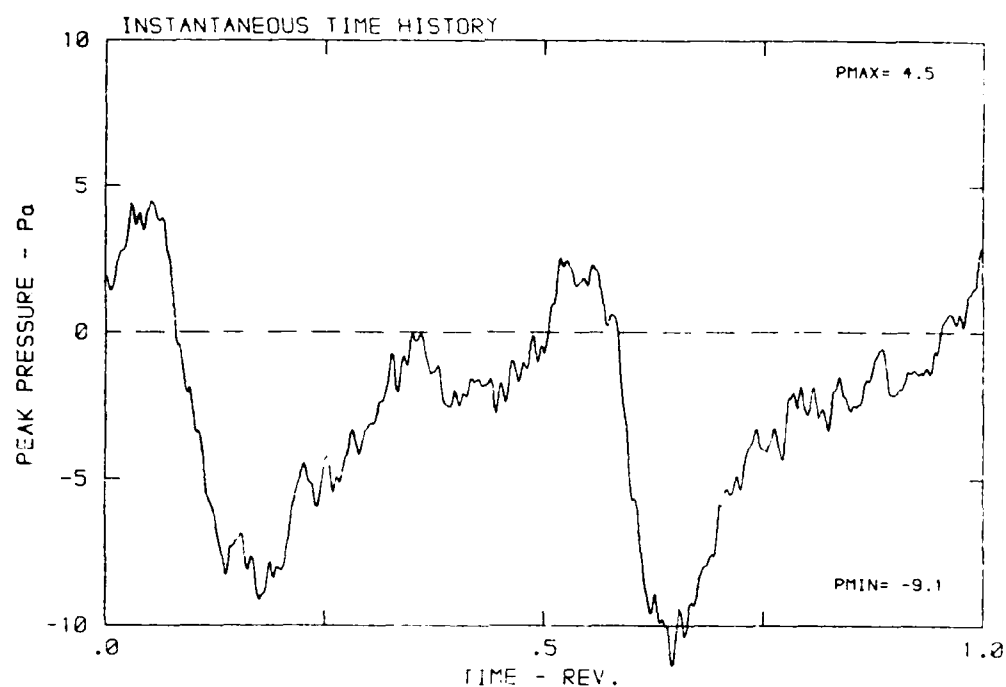
DATA POINT: FNC-10 RUN: 182 MP: 2

$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .267  $\phi$ : .0° T: 287.6 K



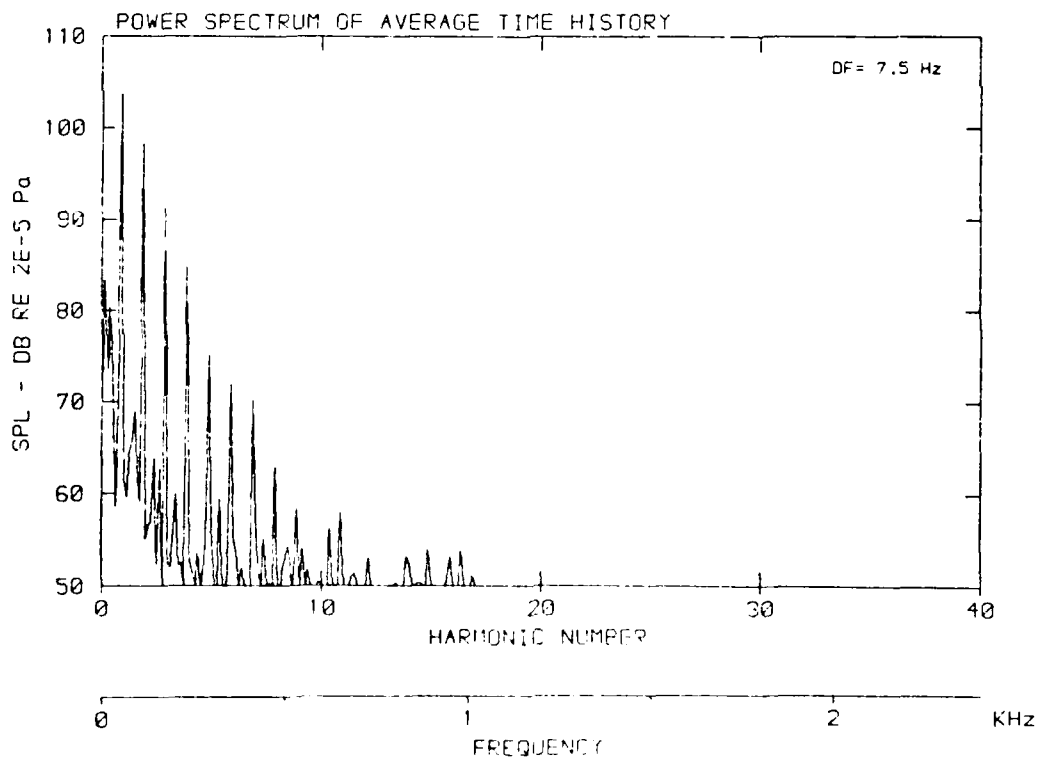
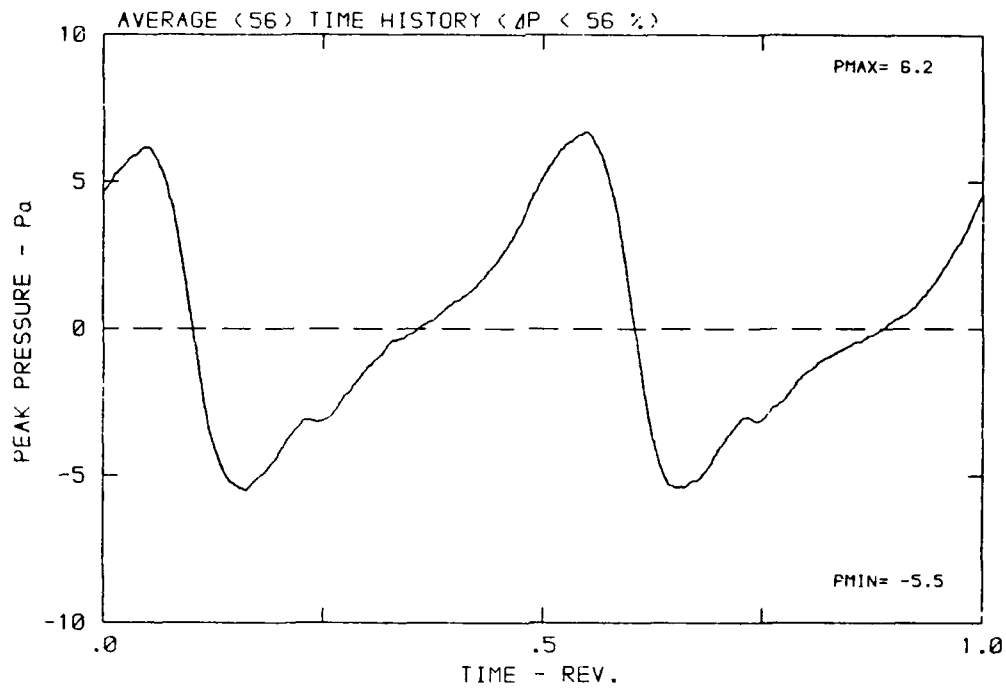
DATA POINT: FNC-10 RUN: 182 MP: 3

$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .267  $\phi$ : .0° T: 287.5



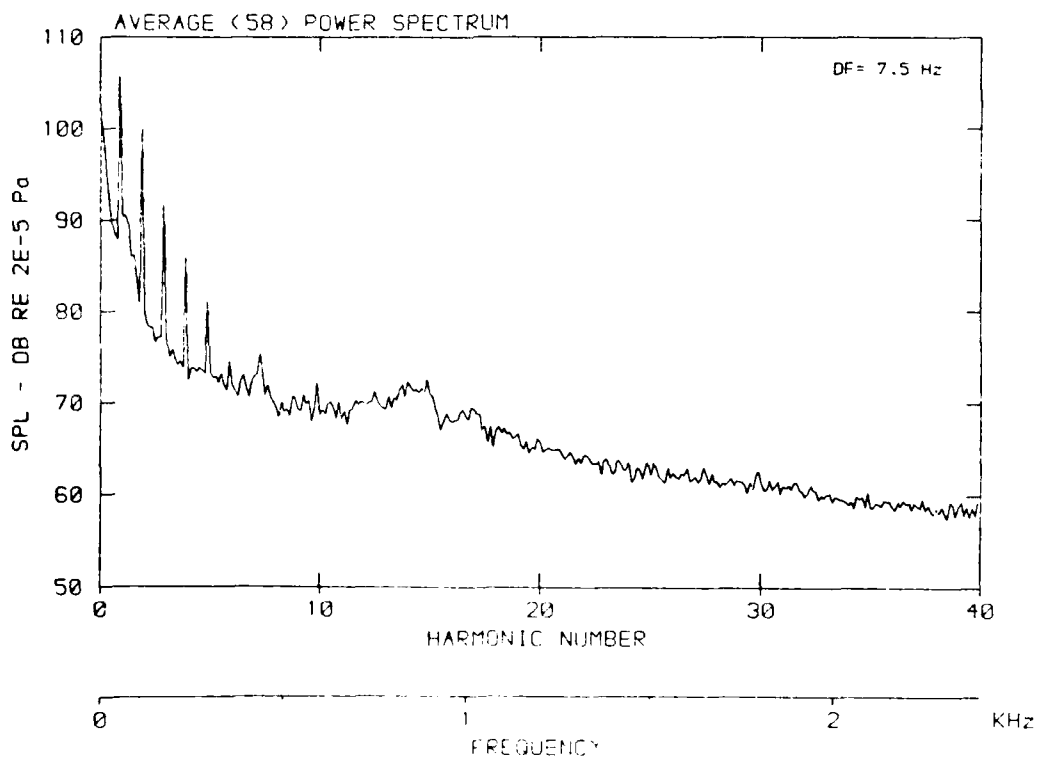
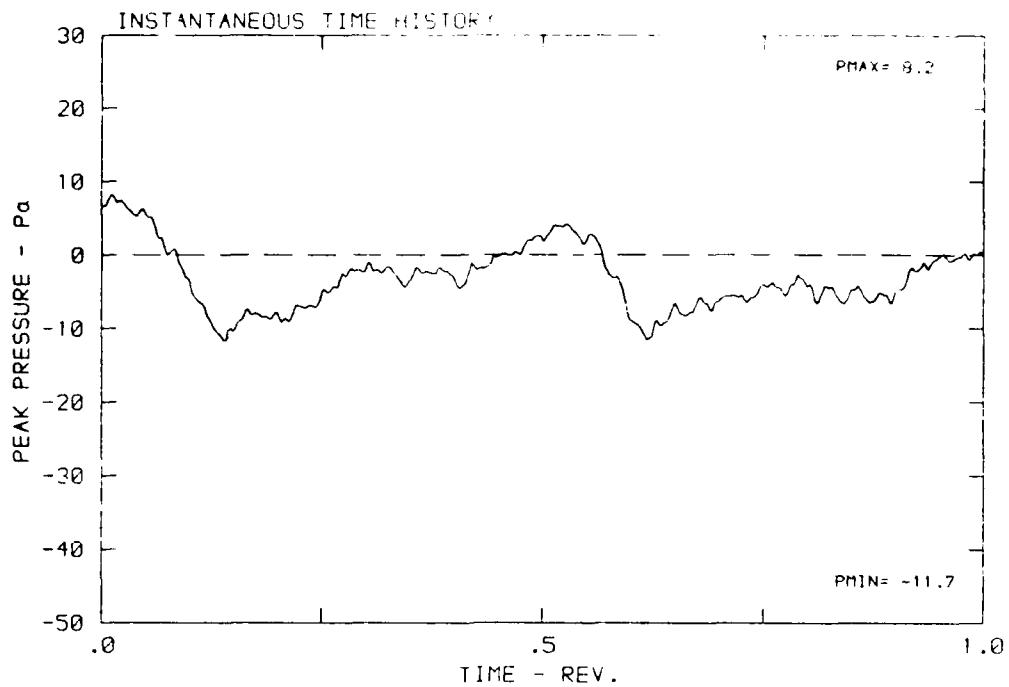
DATA POINT: FNC-10 RUN: 182 MP: 3

$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .267  $\phi$ : .0° T: 287.6 K



DATA POINT: FNC = 0 RUN: 180 MP: 4

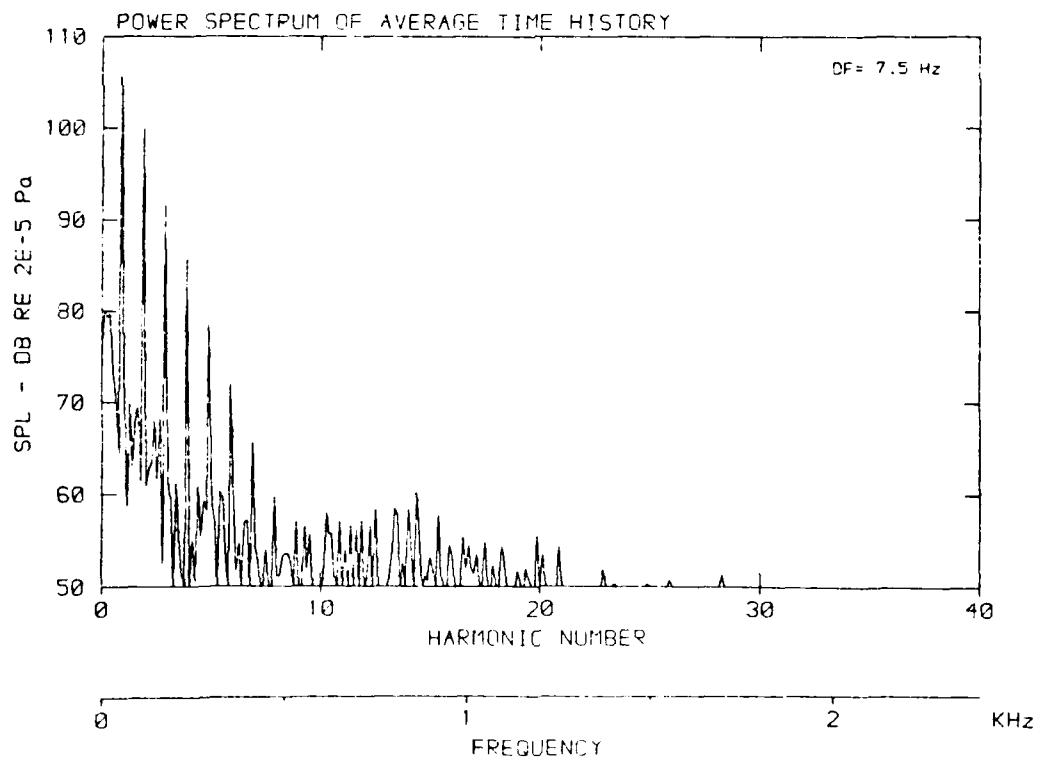
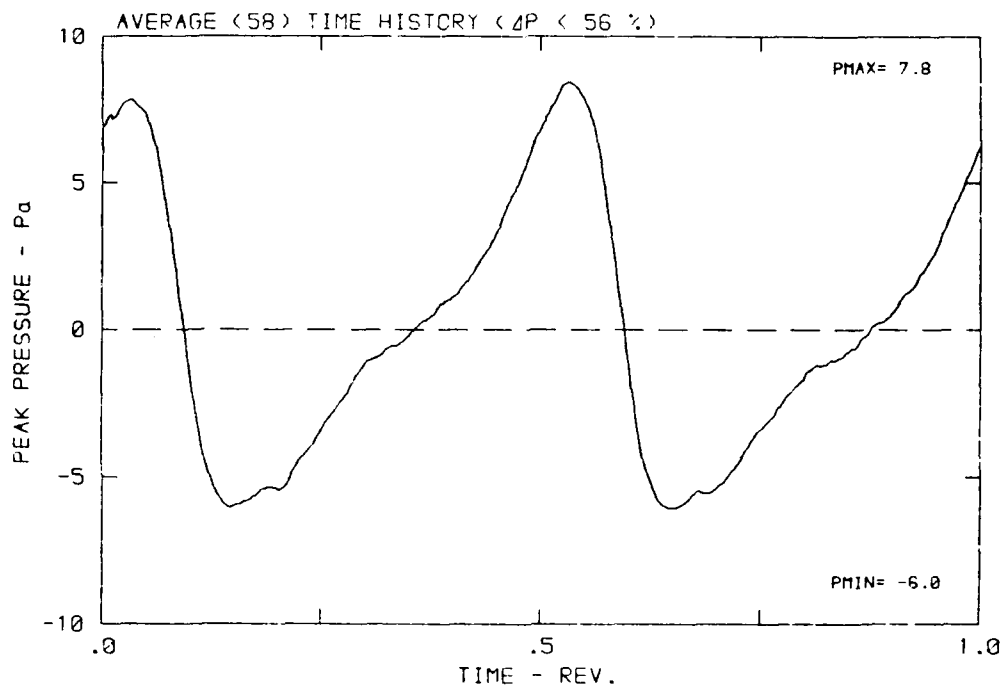
$\beta$ : 23.7° MH: .5830 n: 1800 rpm v: 0.100  $\phi$ : .0° T: 287.6 K



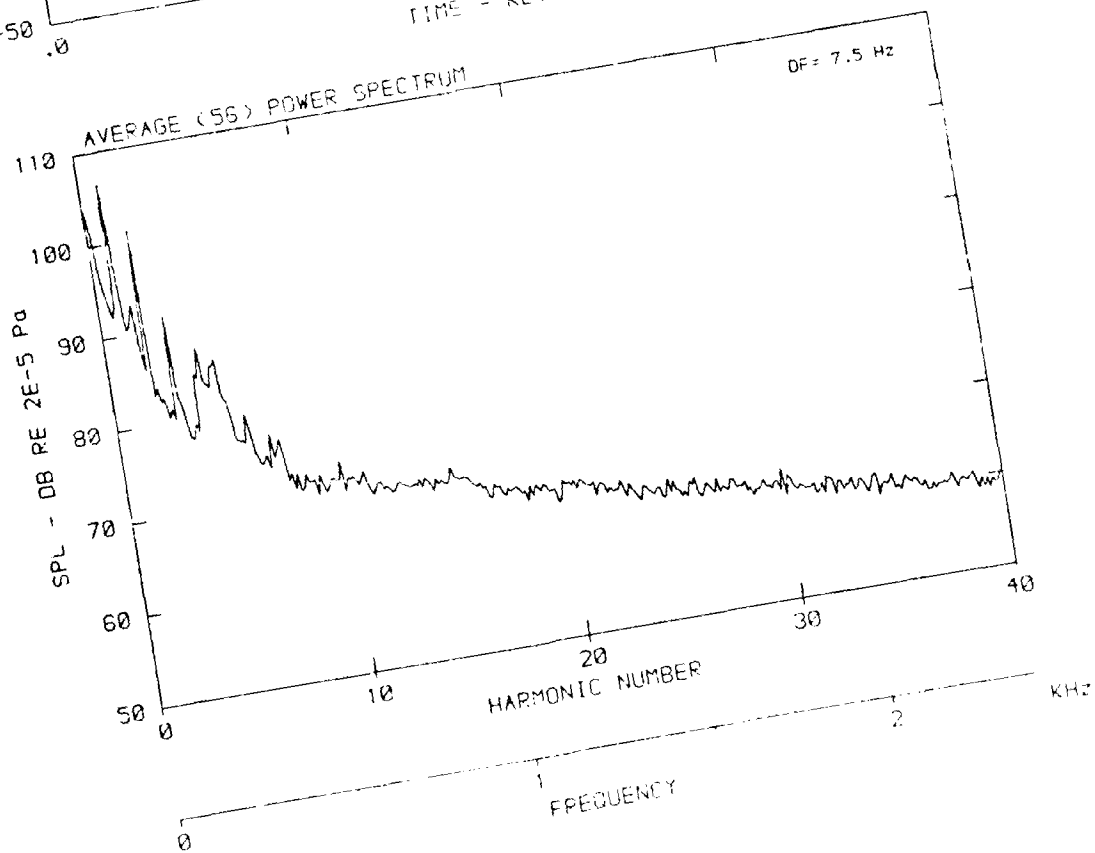
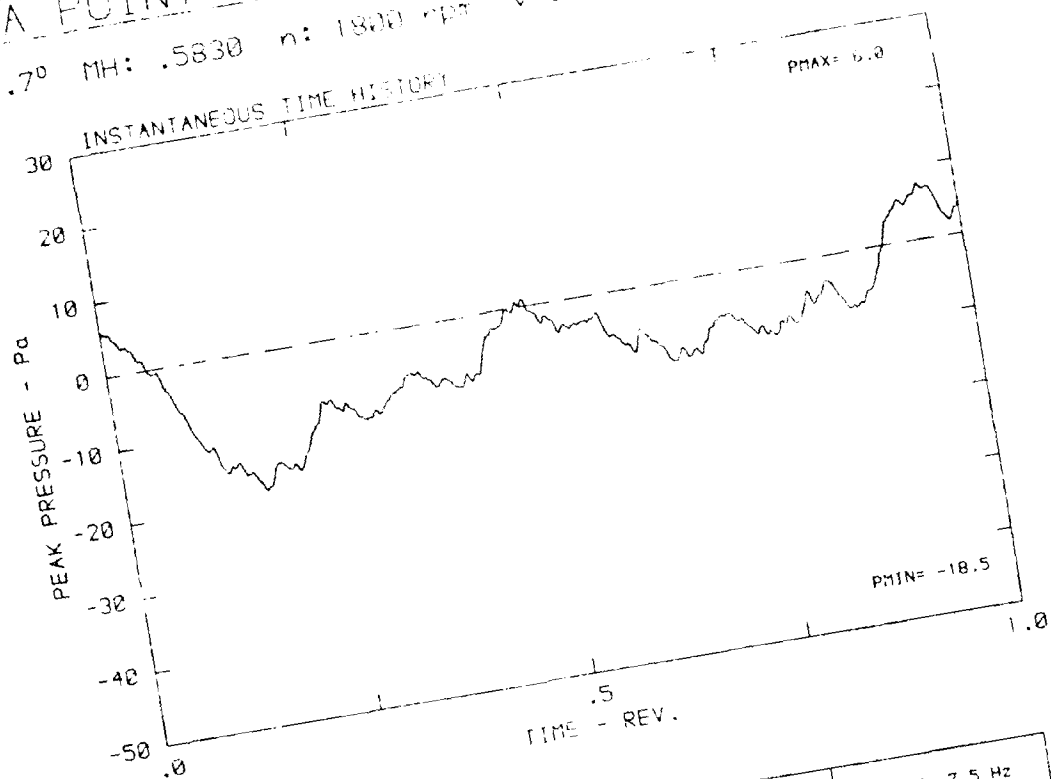


DATA POINT: FNC-10 RUN: 182 MP: 4

$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .267  $\phi$ : .0° T: 287.6 K

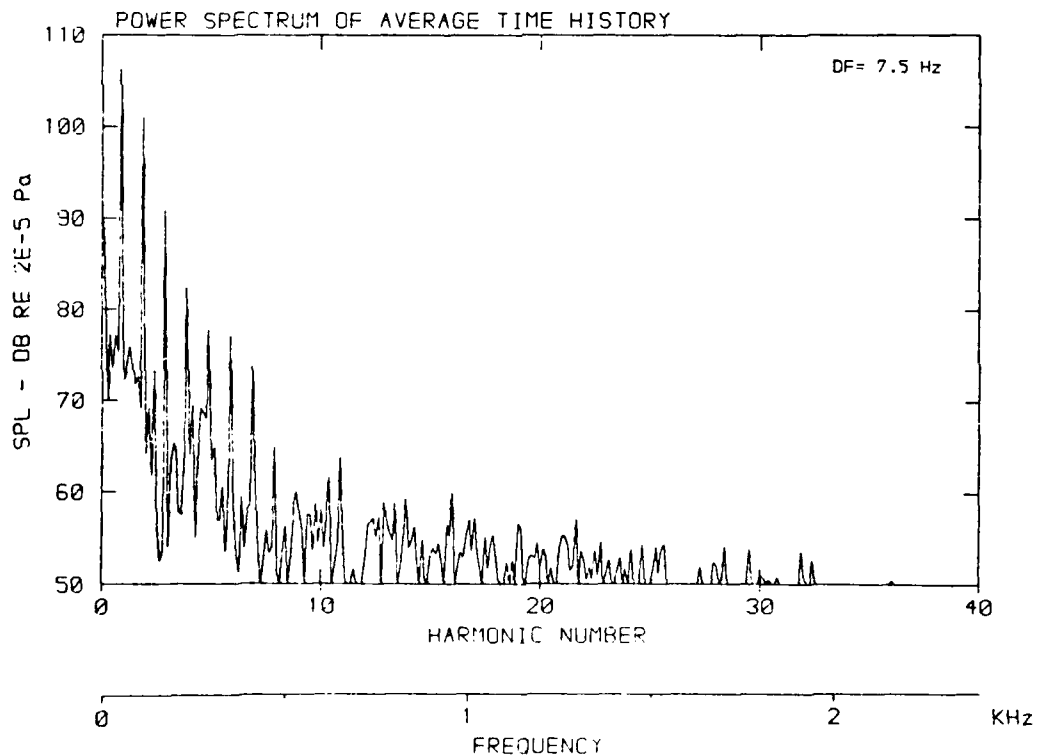
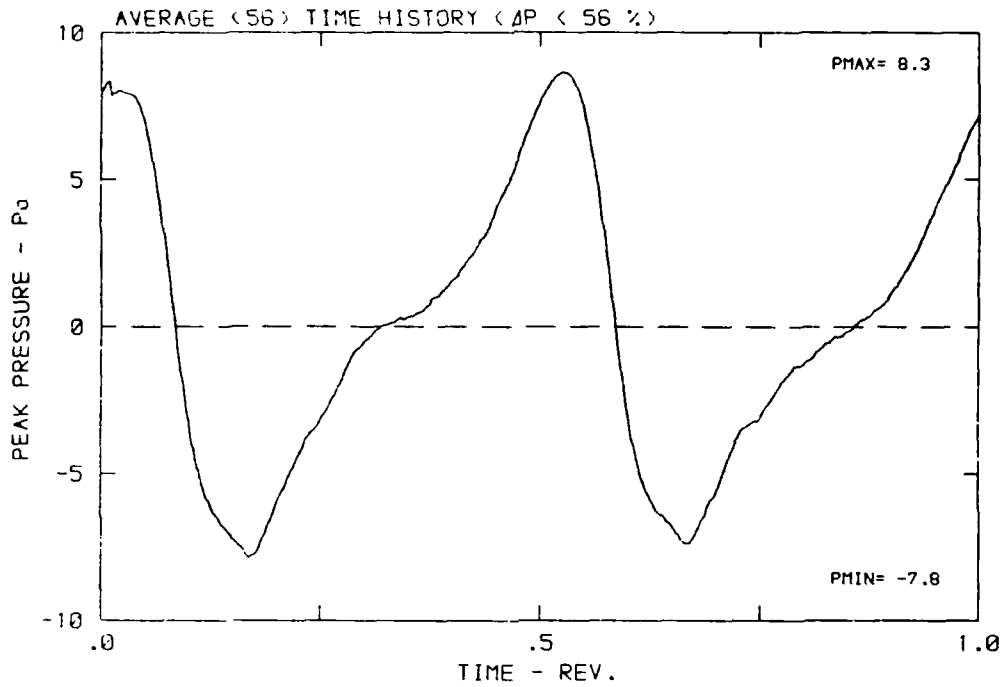


DATA POINT : ENC 1 LINE 183 MP: 3  
 $\beta$ : 23.7° MH: .5830 n: 1800 rpm v-u: .257  $\phi$ : .0° T: 287.6 K



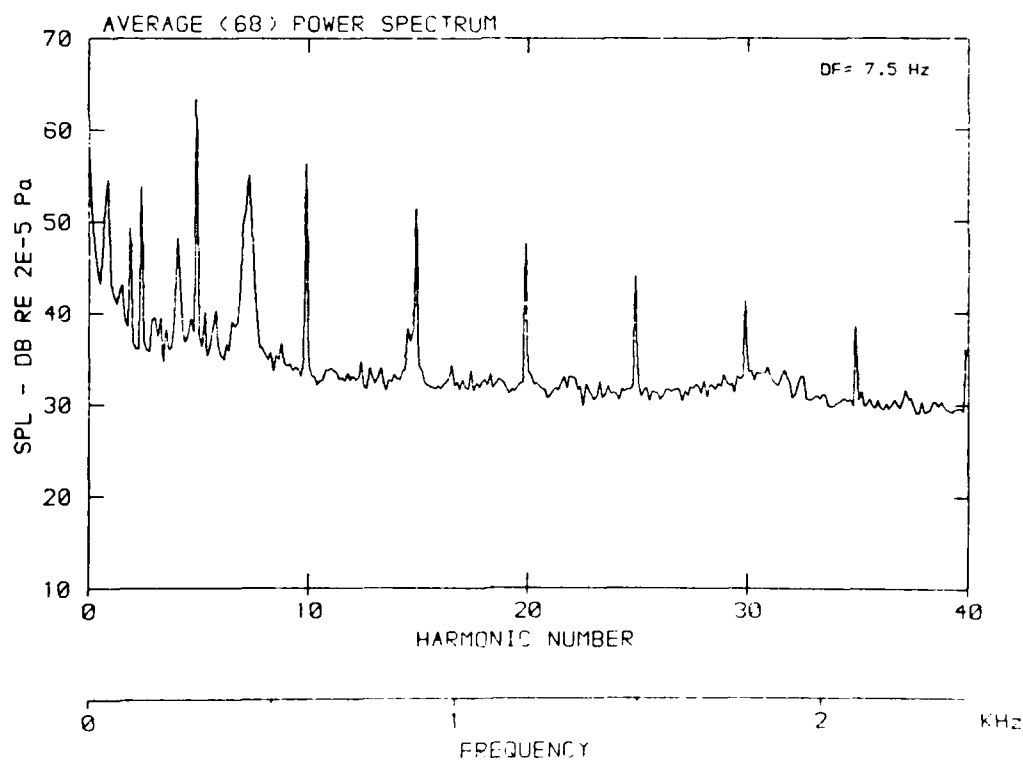
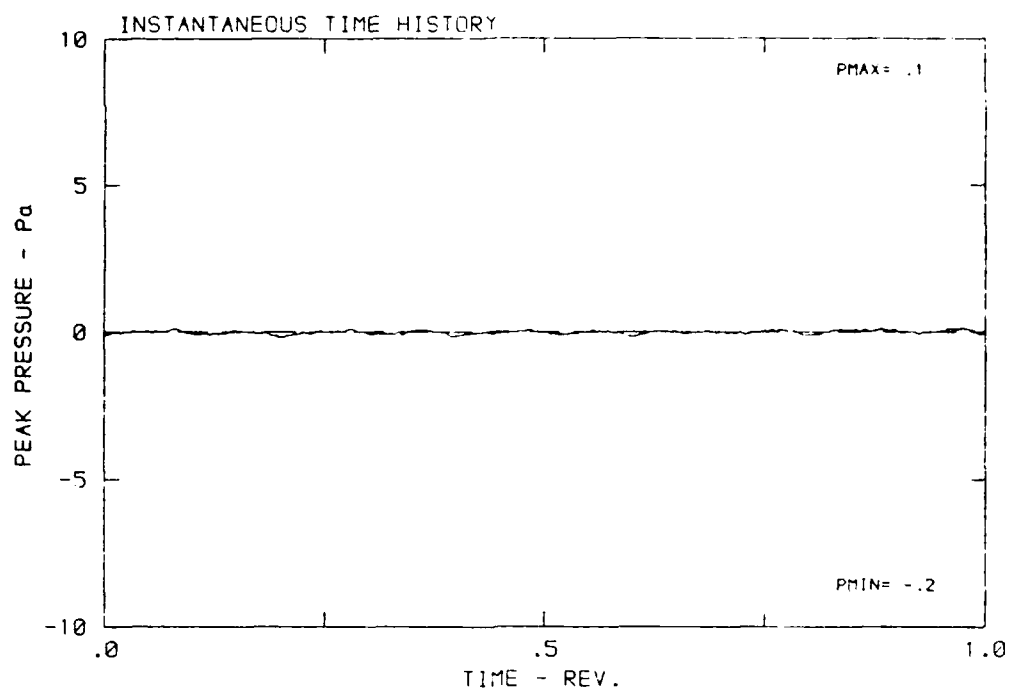
DATA POINT: FNC-10 RUN: 182 MP: 5

$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .267  $\phi$ : .0° T: 287.6 K



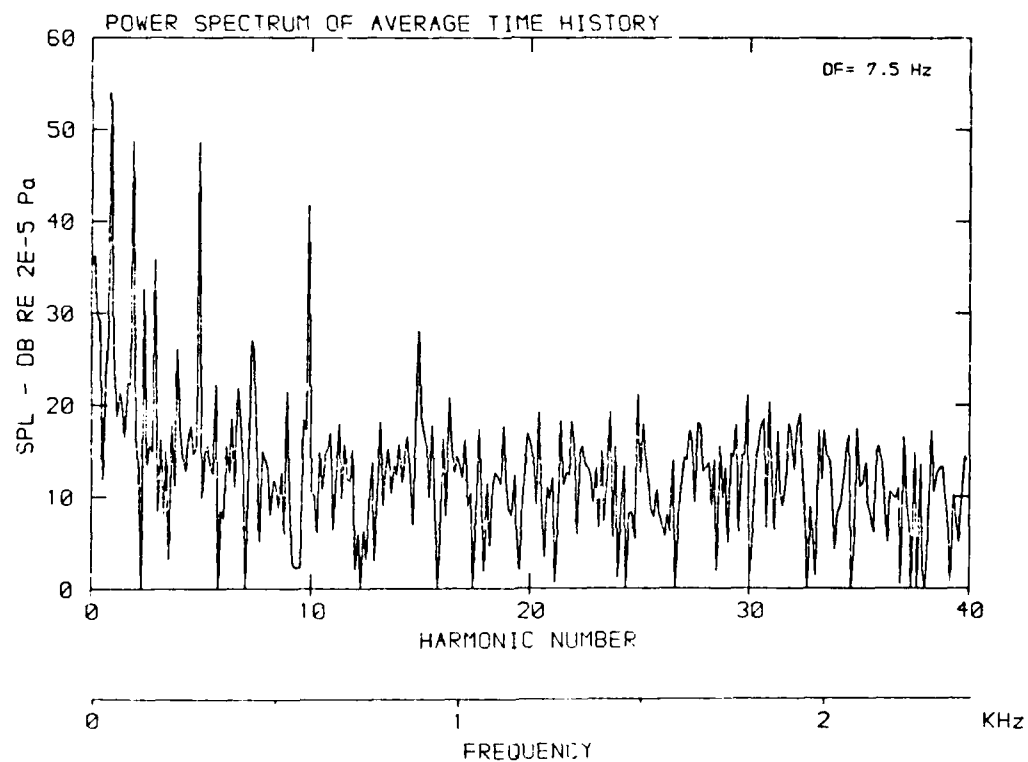
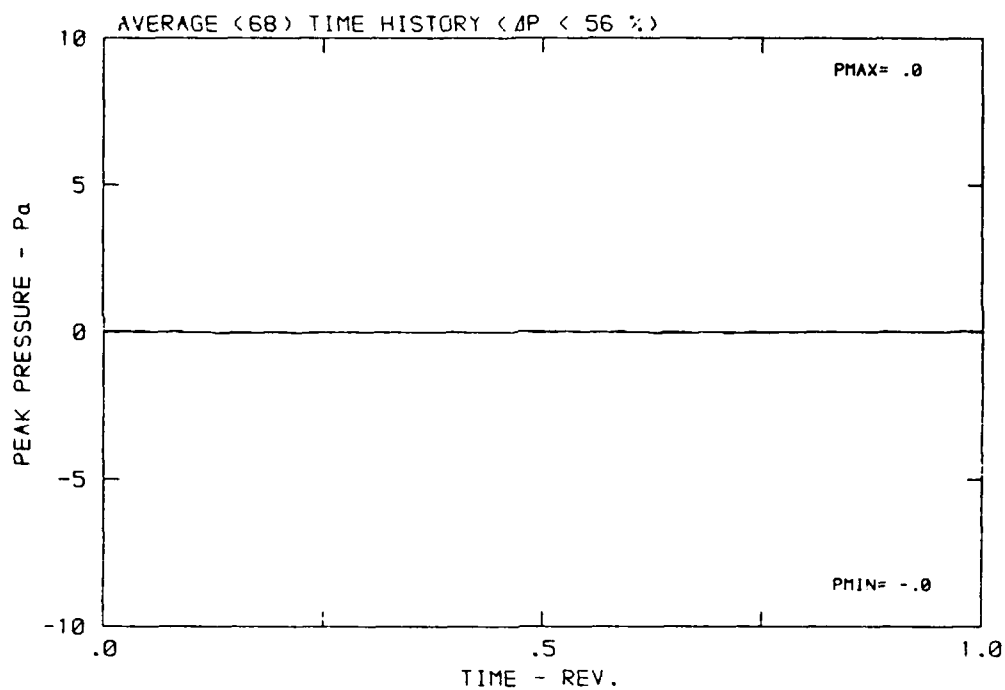
DATA POINT: FNC-10 RUN: 182 NP: 5

$\beta$ : 23.7° MH: .5630 n: 1800 rpm  $v_u$ : .267  $\phi$ : .0° T: 287.6 K



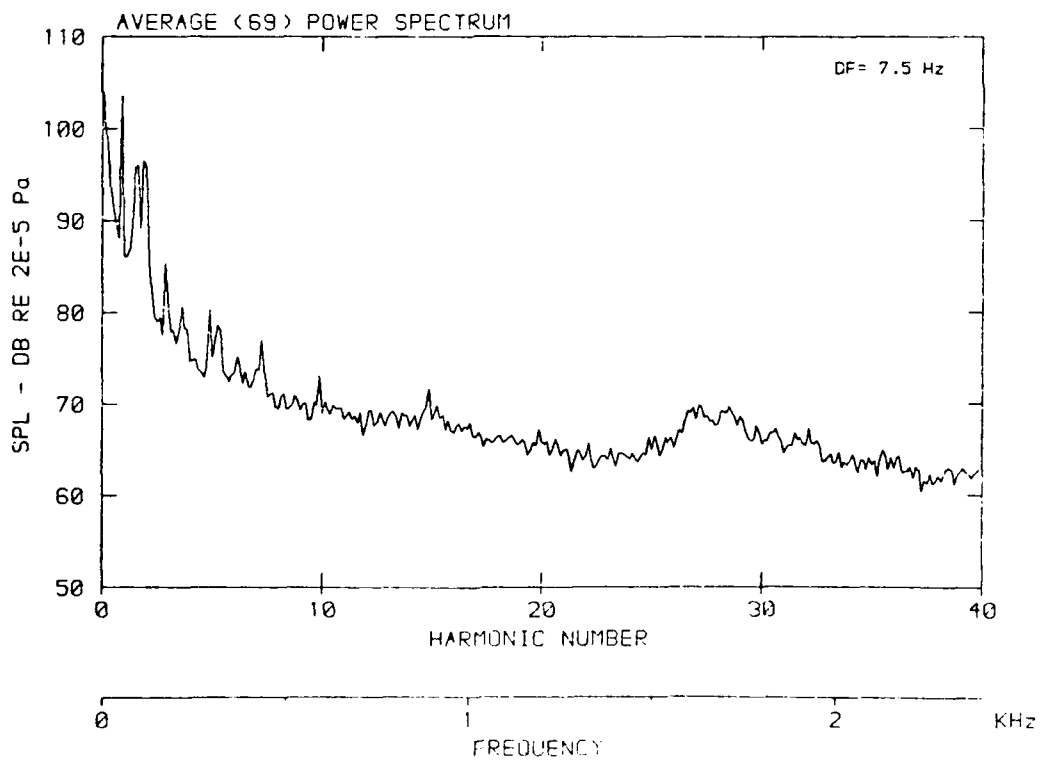
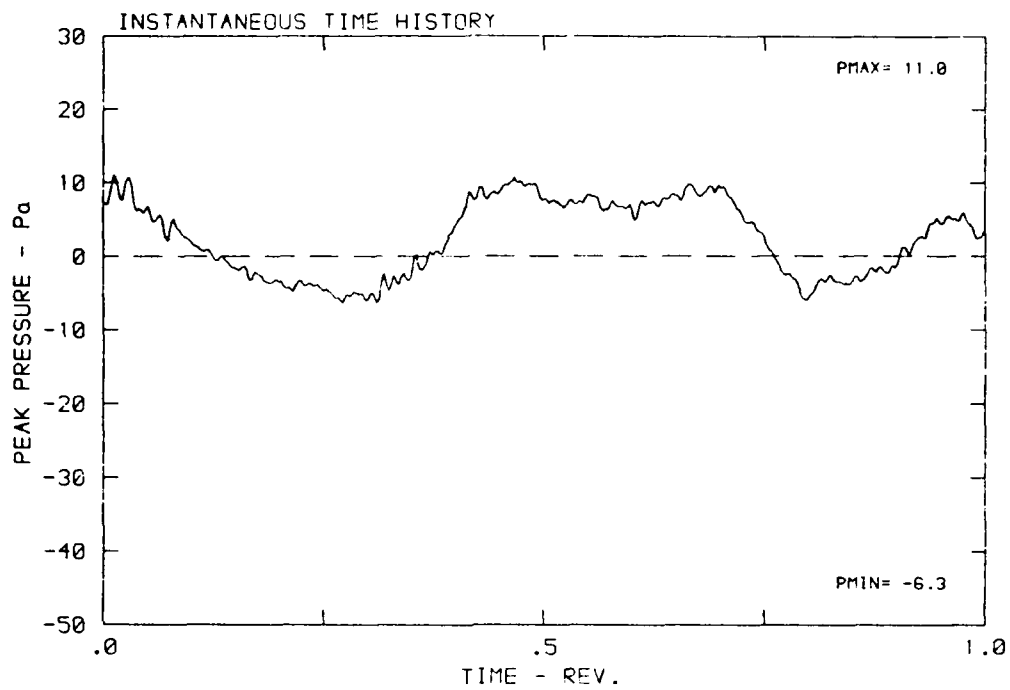
DATA POINT: FNC-10 RUN: 182 MP: 6

$\beta$ : 23.7° MH: .5830 n: 1800 rpm v/u: .267  $\phi$ : .0° T: 287.6 K



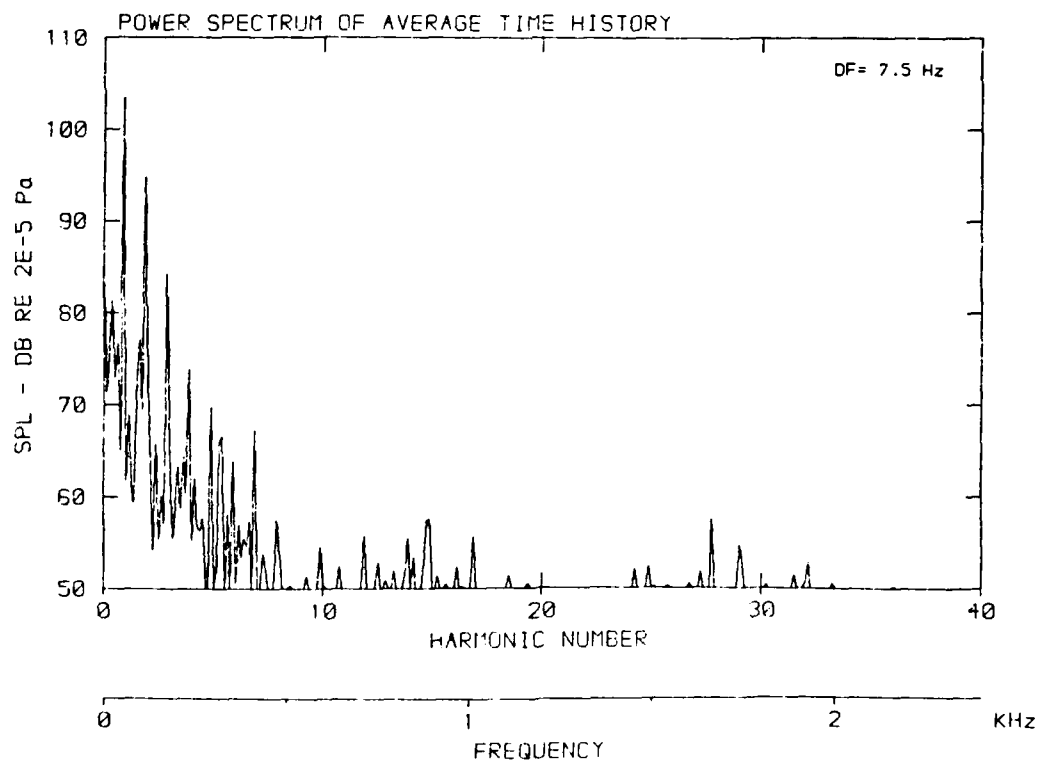
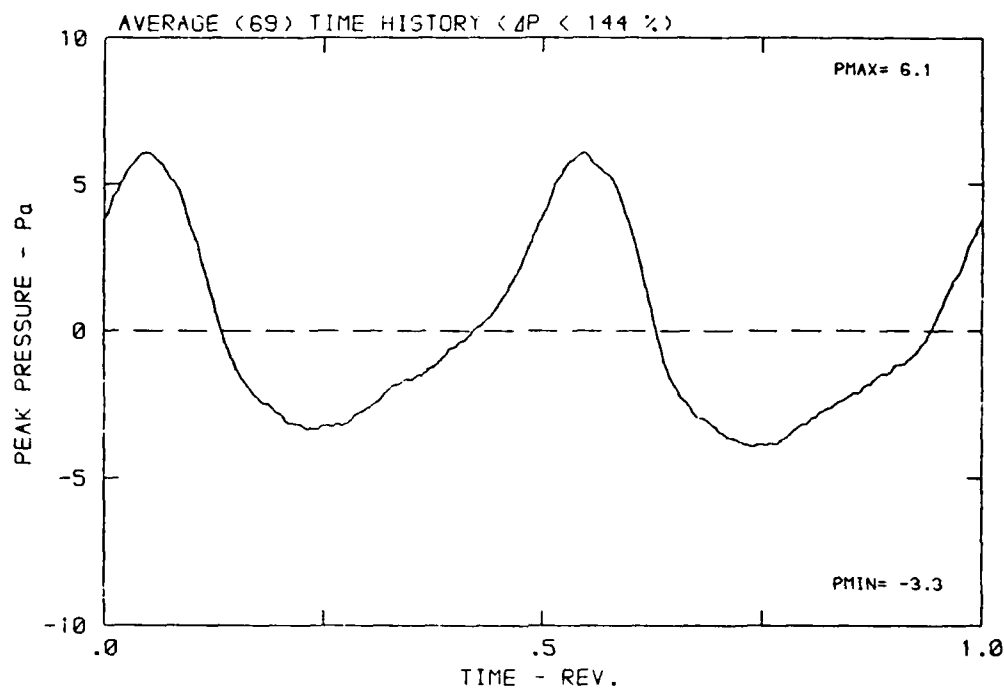
DATA POINT: FNC-10 RUN: 182 MP: 7

$\beta$ : 23.7° MH: .5930 n: 1800 rpm  $v/u$ : .267  $\phi$ : .0° T: 287.6 K



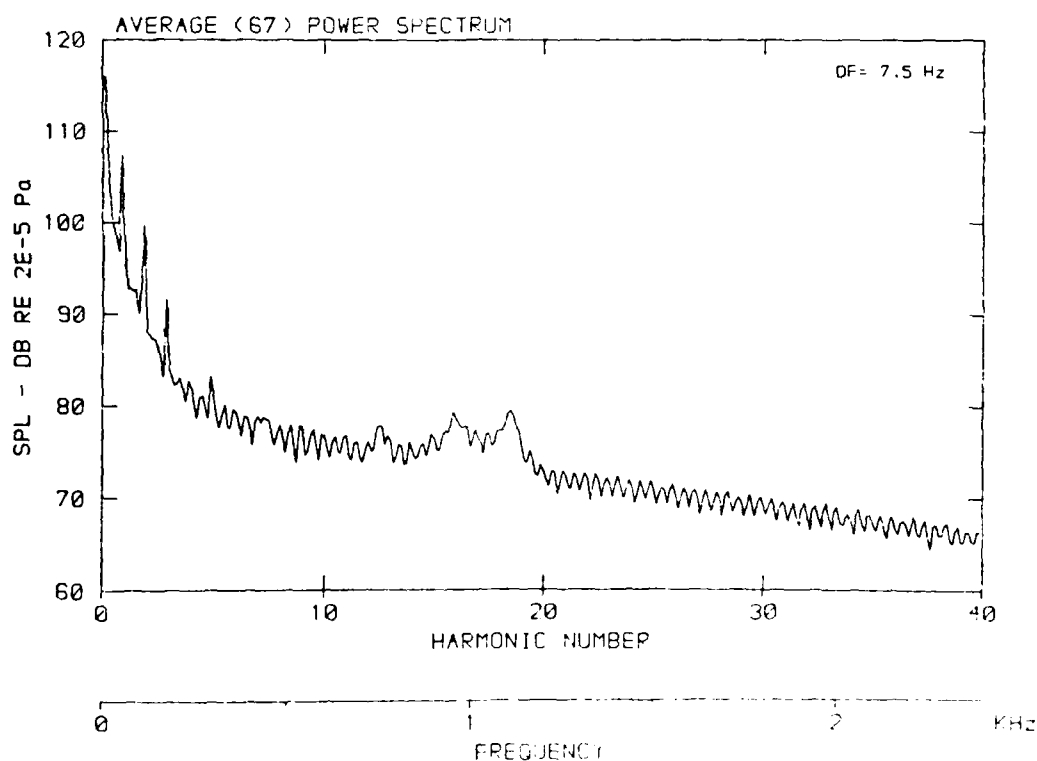
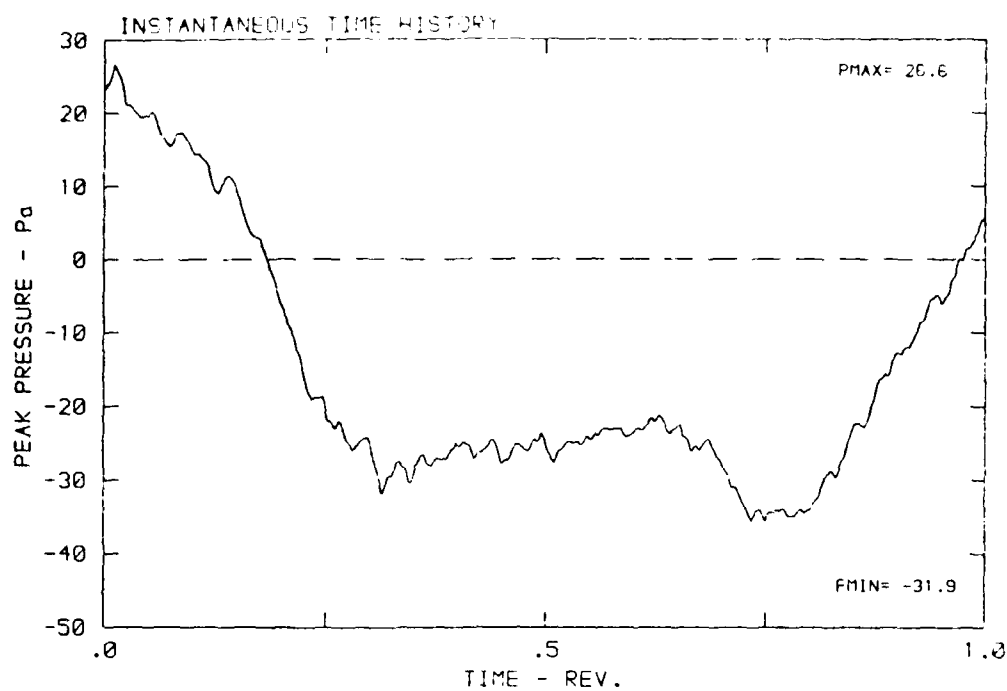
DATA POINT: FNC-10 RUN: 182 MP: 7

$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .267  $\phi$ : .0° T: 287.6 K



DATA POINT: FNC-10 RUN: 182 MP: 9

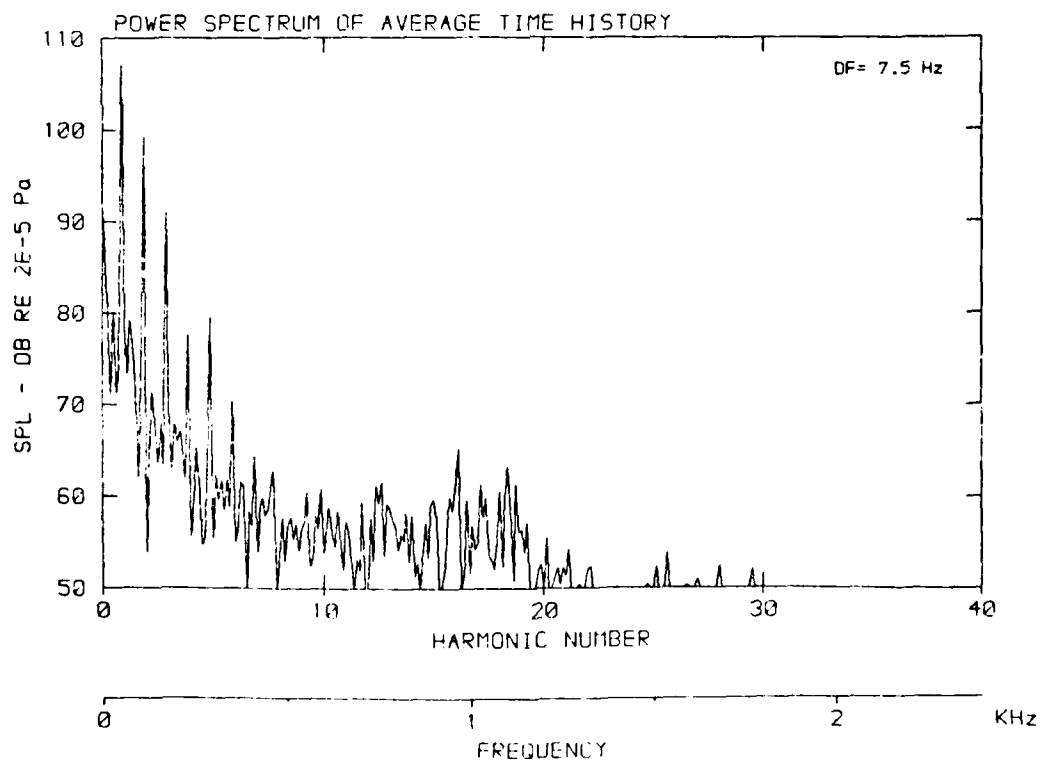
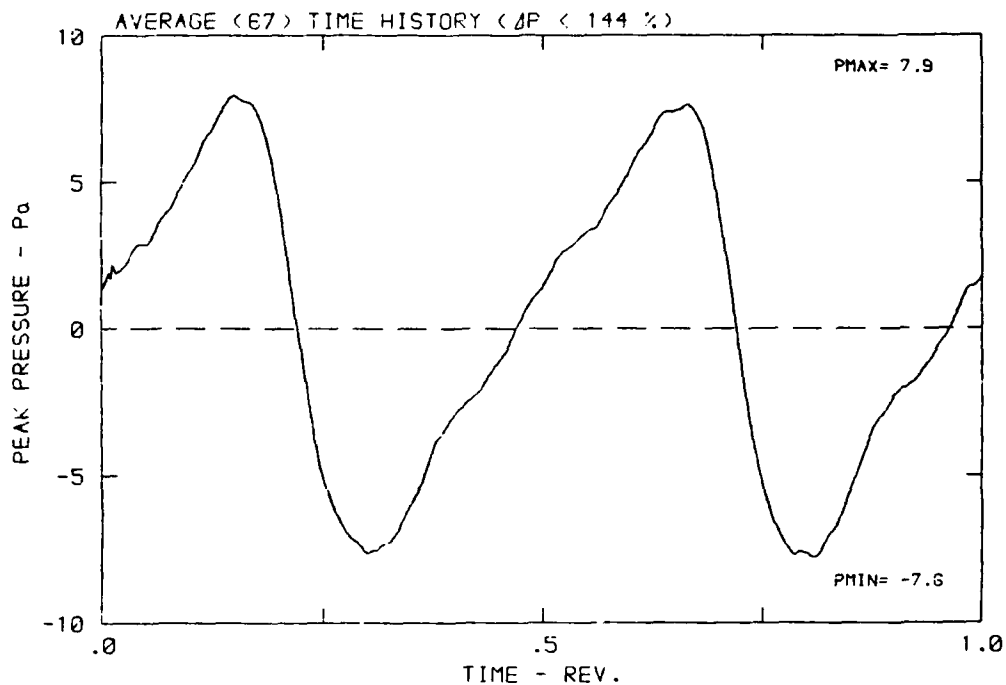
$\beta$ : 23.7° MH: .5830 n: 1800 rpm  $v/u$ : .257  $\phi$ : .0° T: 287.5 K





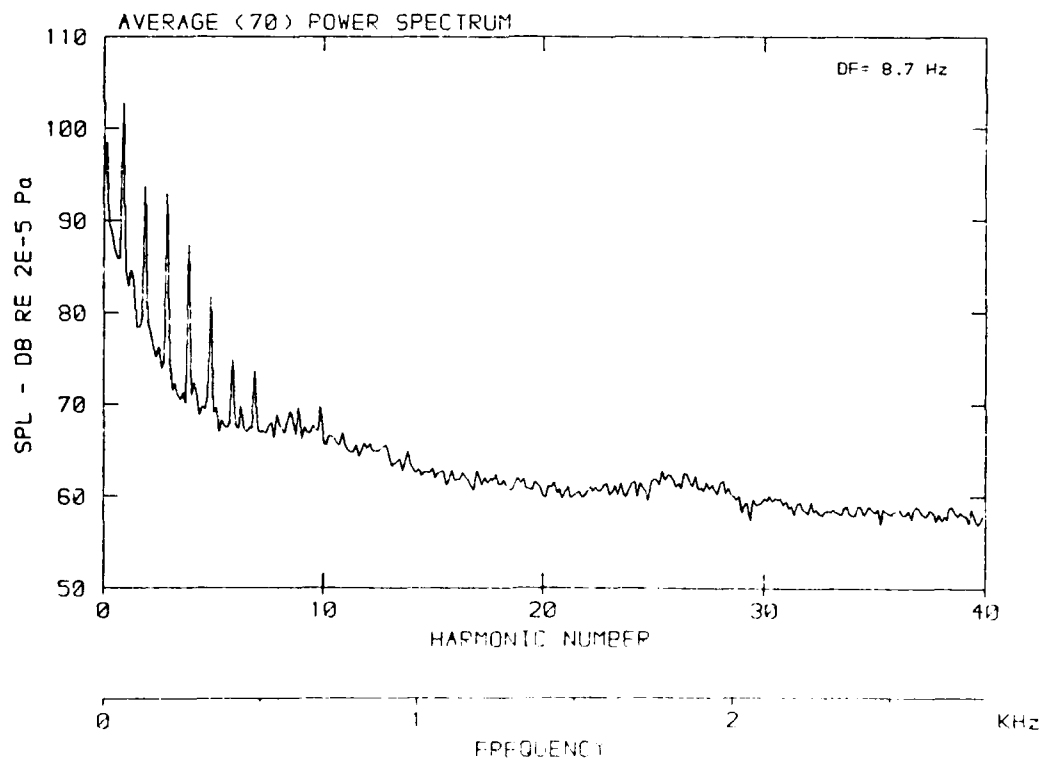
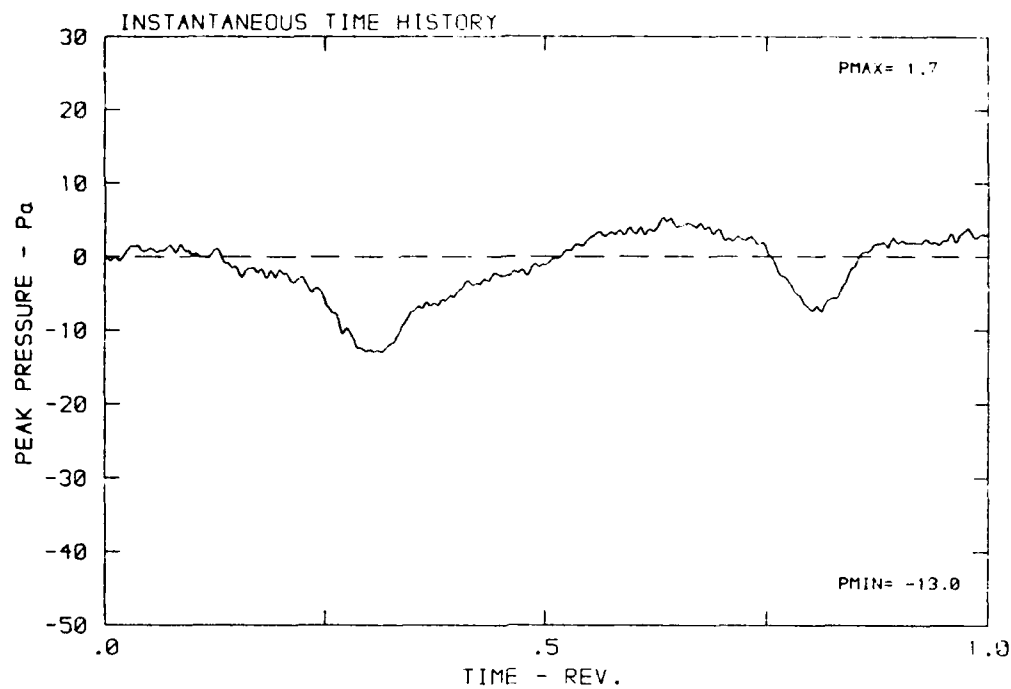
DATA POINT: FNC-10 RUN: 182 MP: 9

$\beta$ : 23.7° MH: .5830 n: 1800 rpm v/u: .267  $\phi$ : .0° T: 287.6 K



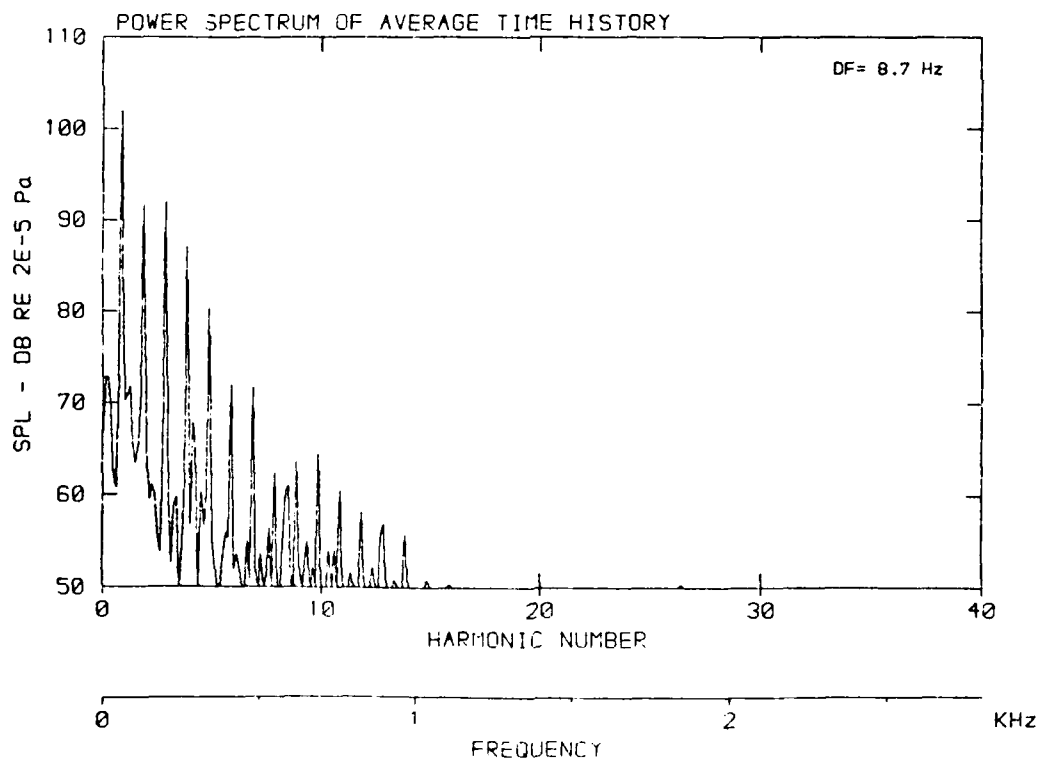
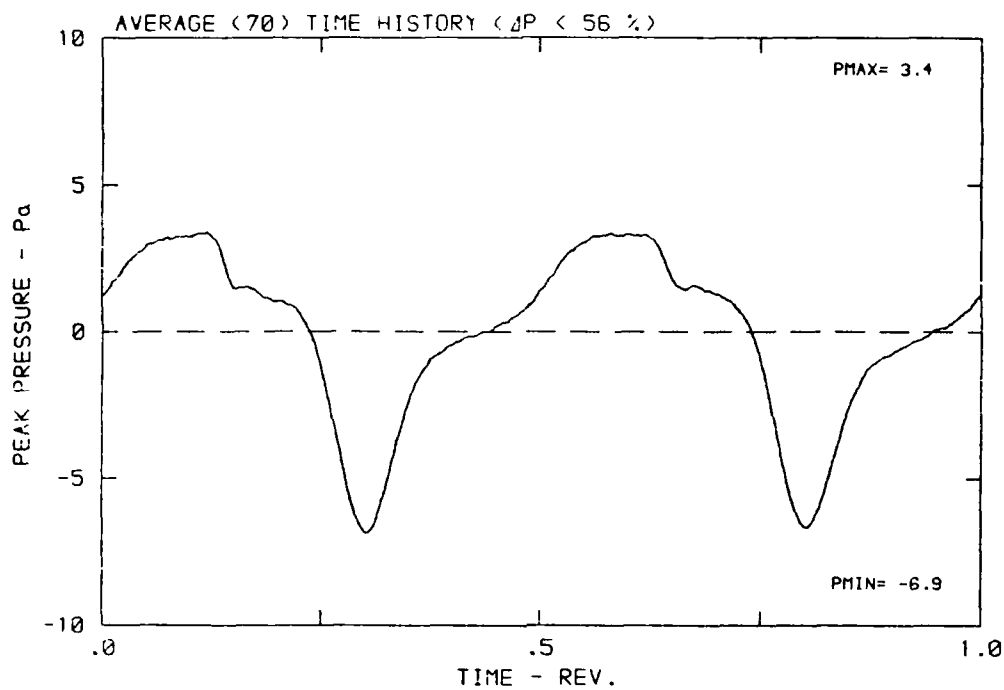
DATA POINT: FNC-11 RUN: 183 MF: 1

$\beta$ : 23.7° MH: .6738 n: 2100 rpm  $v/u$ : .25'  $\phi$ : .0° T: 298.1 K



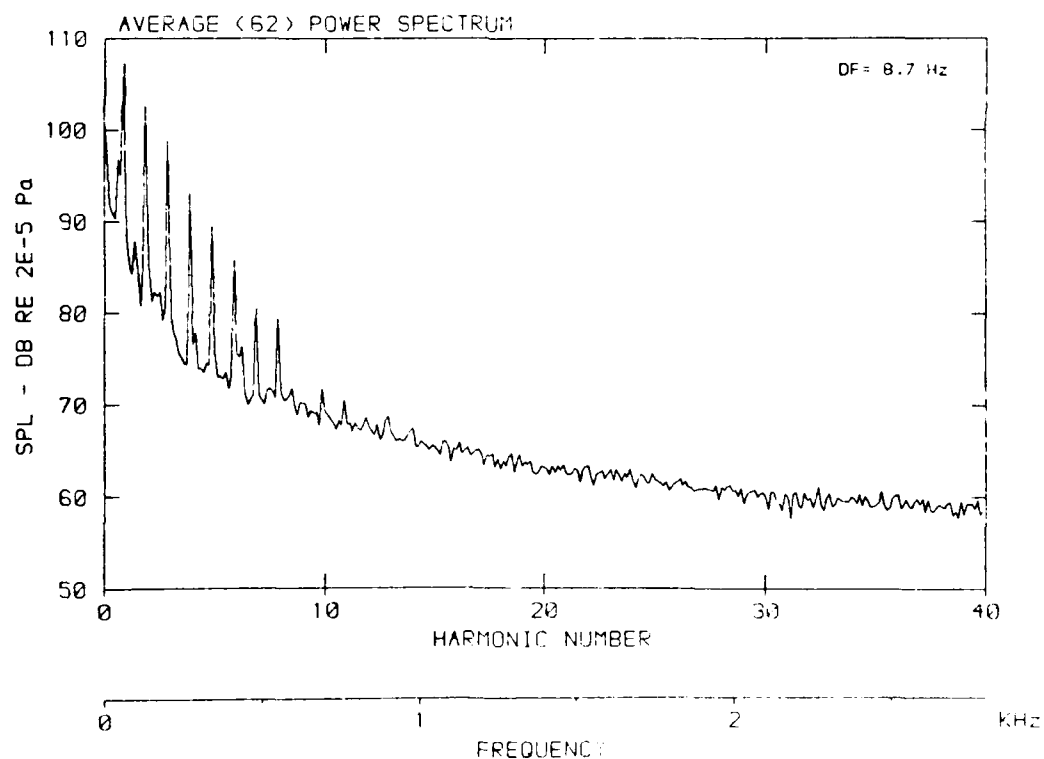
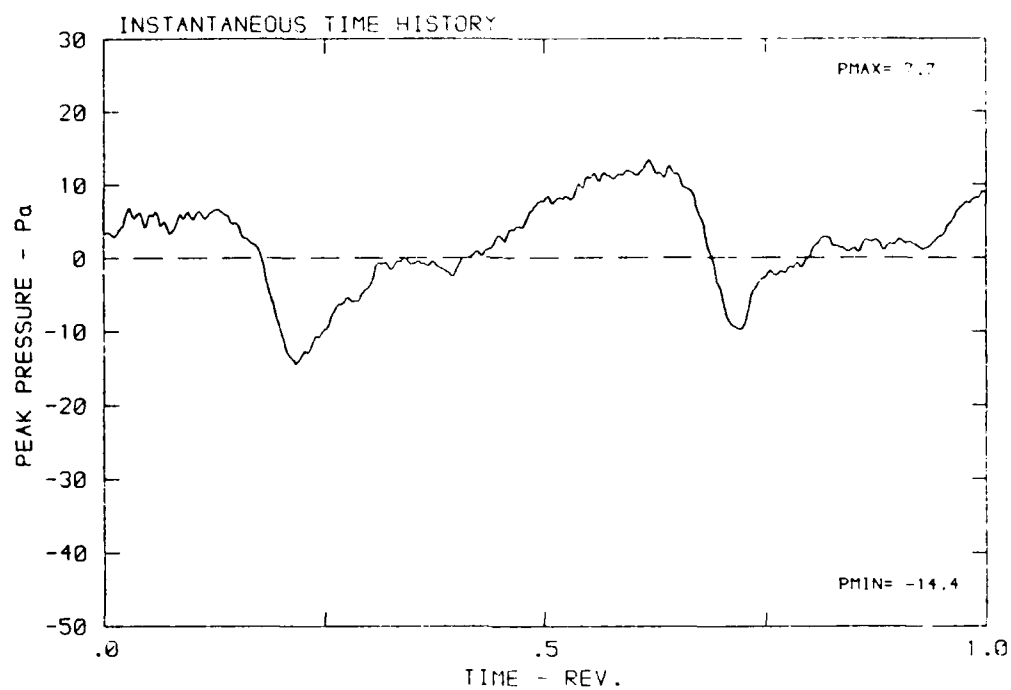
DATA POINT: FNC-11 RUN: 183 MP: 1

$\beta$ : 23.7° MH: .6738 n: 2100 rpm v/u: .231  $\phi$ : .0° T: 288.1 K



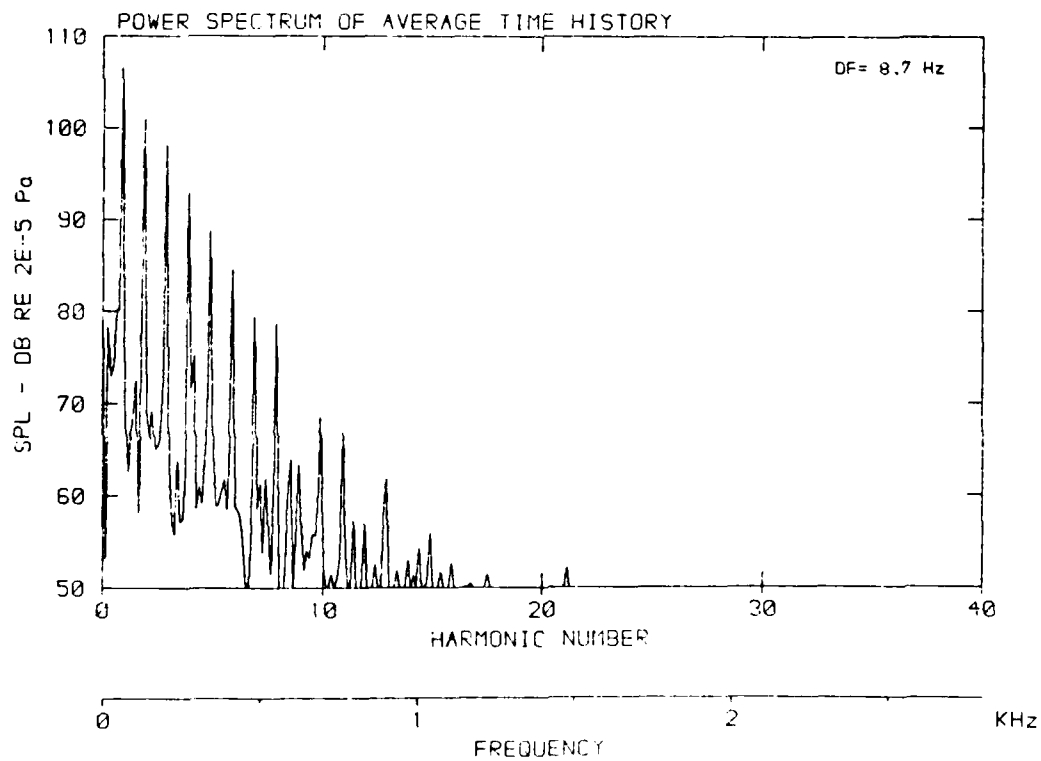
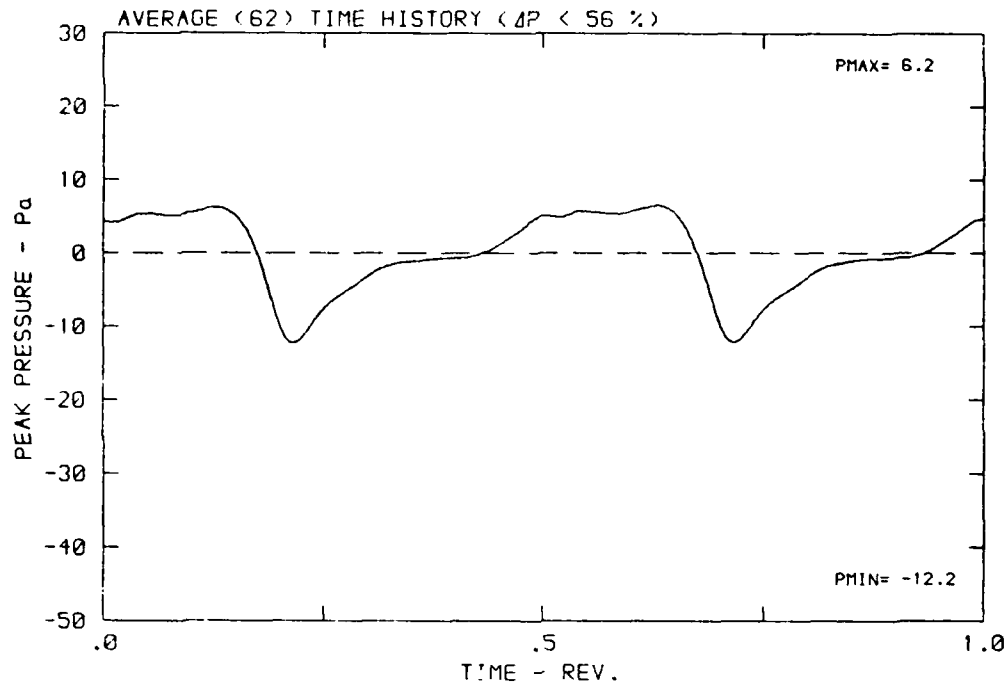
DATA POINT: FNC-11 RUN: 183 MP: 2

$\beta$ : 23.7° MH: .6738 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 288.1 K



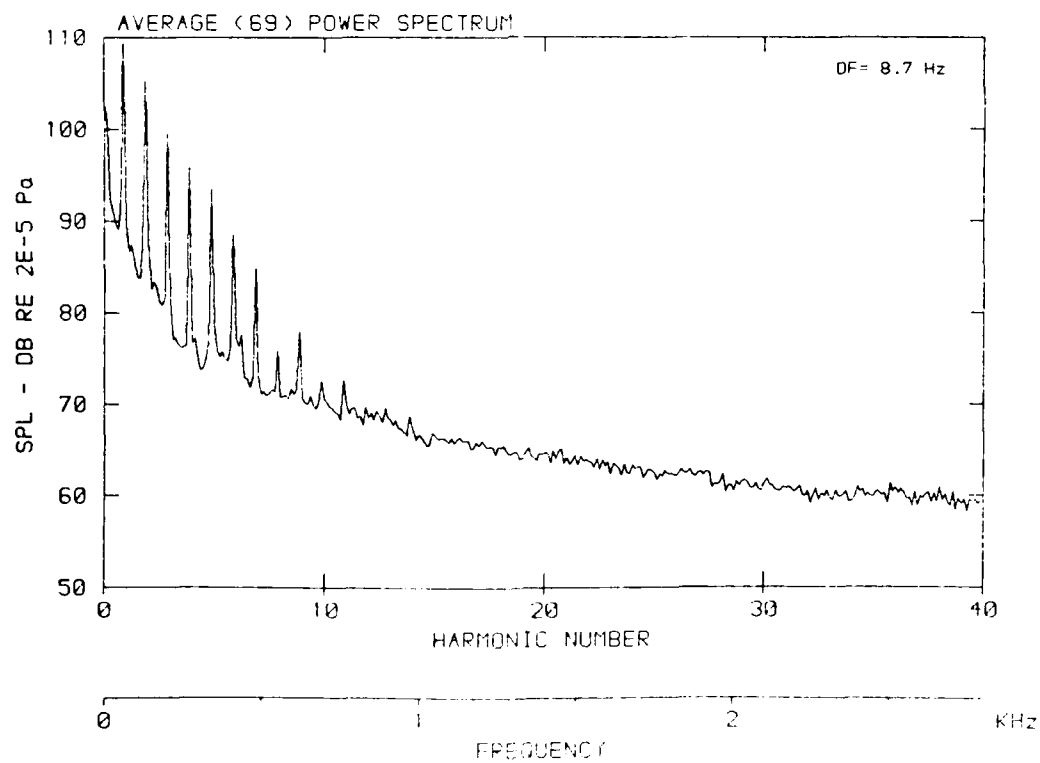
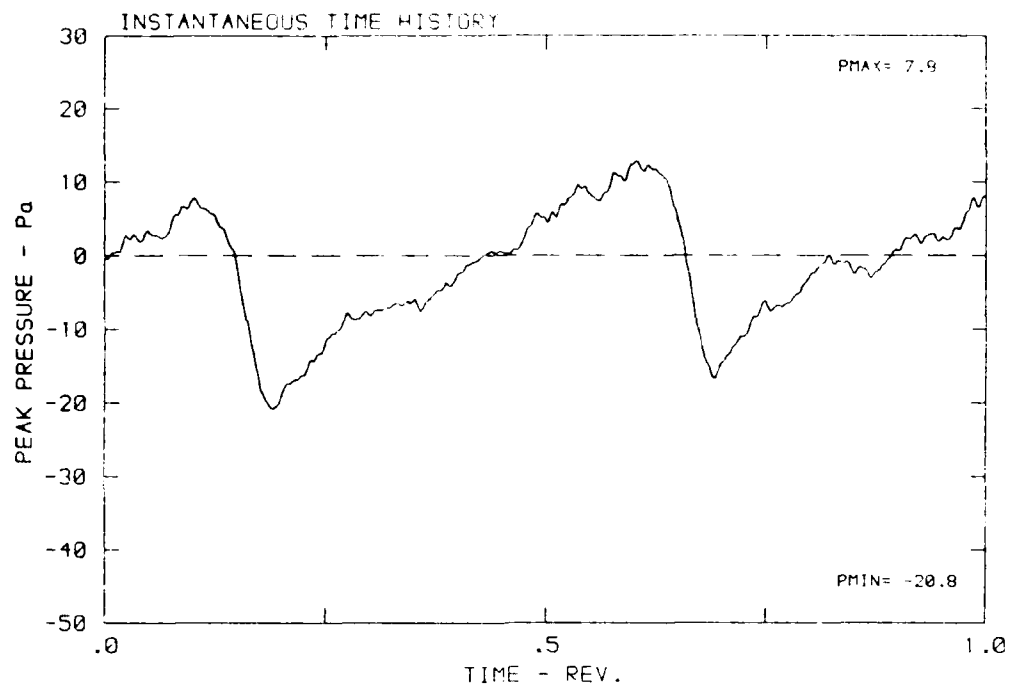
DATA POINT: FNC-11 RUN: 183 MP: 2

$\beta$ : 23.7° MH: .6738 n: 2100 rpm v/u: .231  $\phi$ : .0° T: 288.1 K



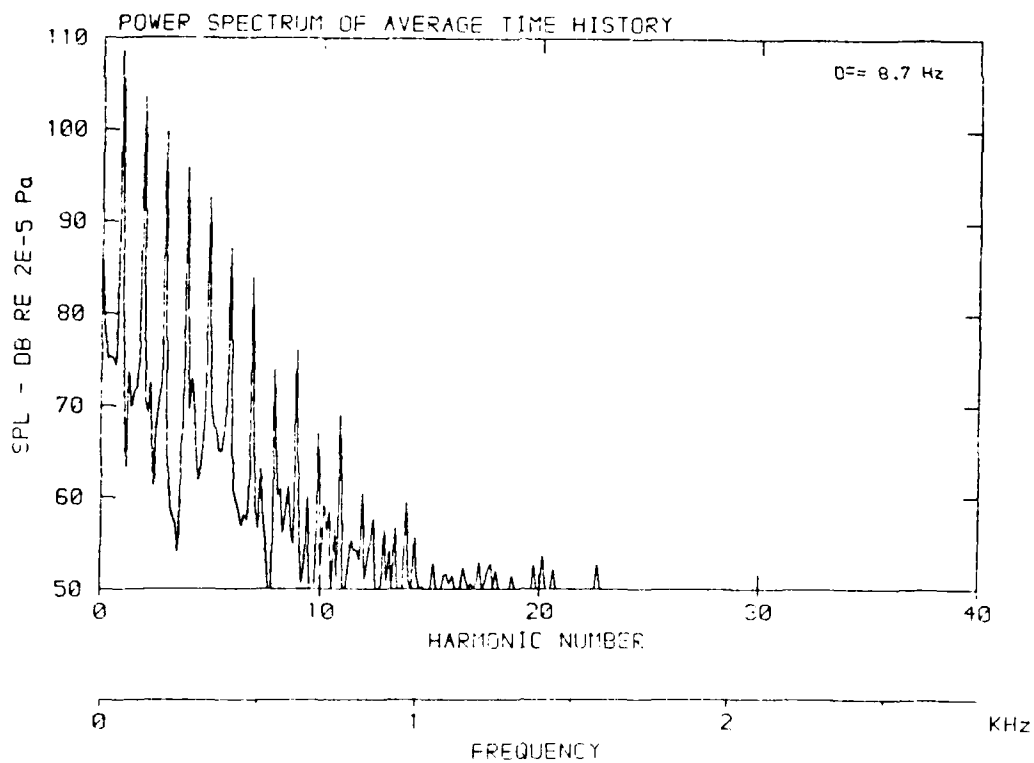
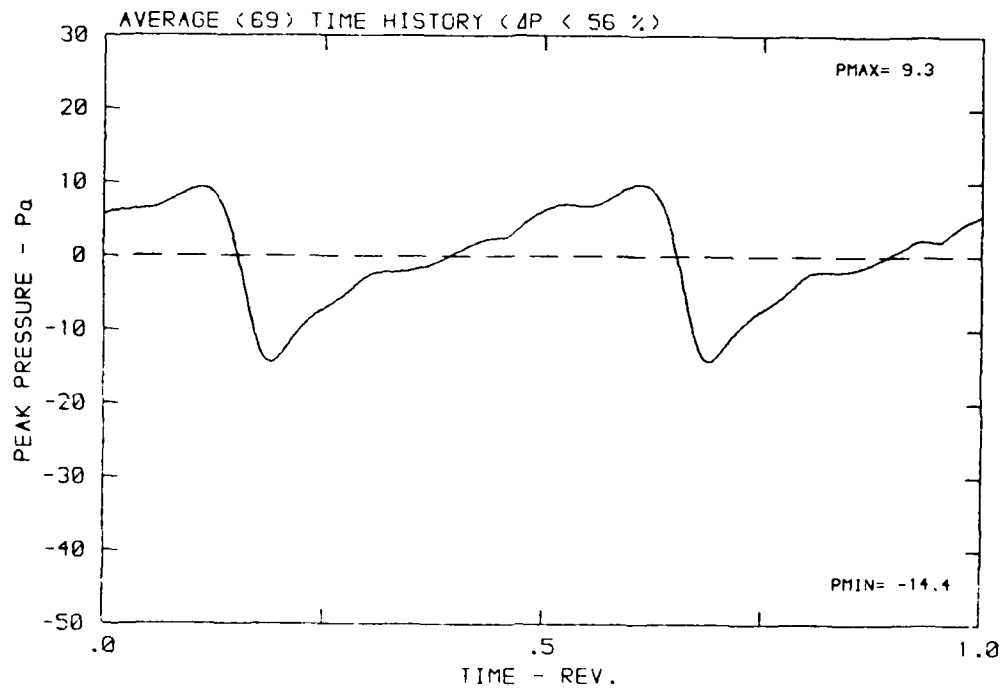
DATA POINT: FNC-11 RUN: 183 MP: 3

$\beta$ : 23.7° MH: .6738 n: 2100 rpm v<sub>40</sub>: .231  $\phi$ : .0° T: 268.1 K



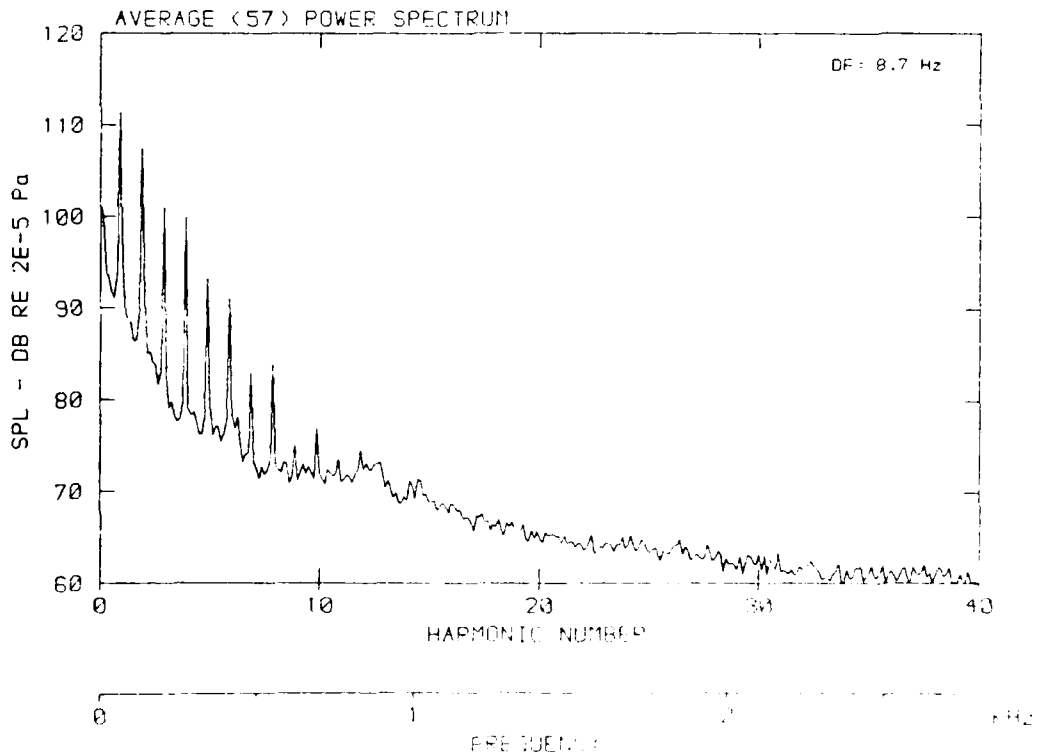
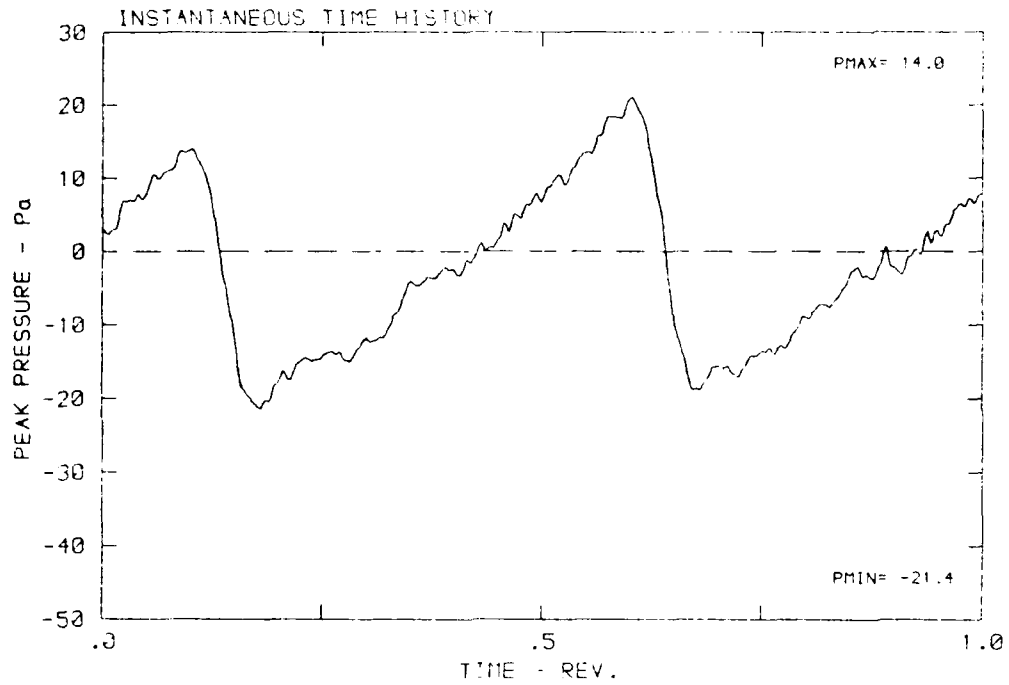
DATA POINT: FNC-11 RUN: 183 MP: 3

$\beta$ : 23.7° MH: .6738 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 288.1 K



DATA POINT: ENC-11 RUN: 183 MP: 4

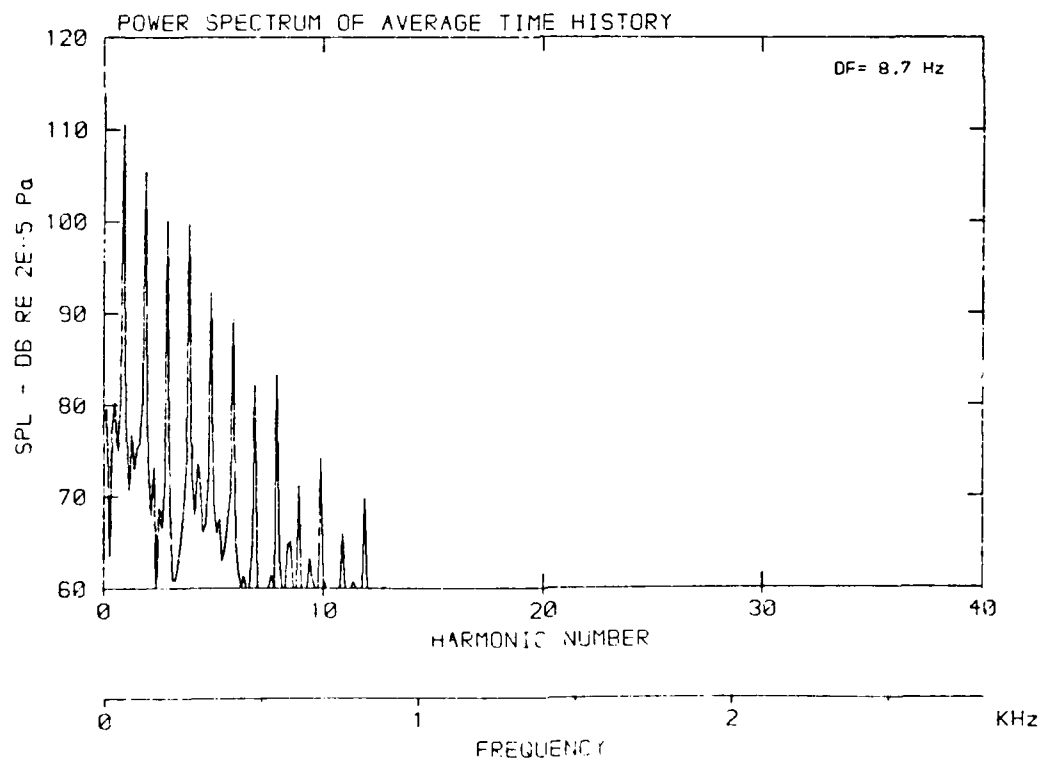
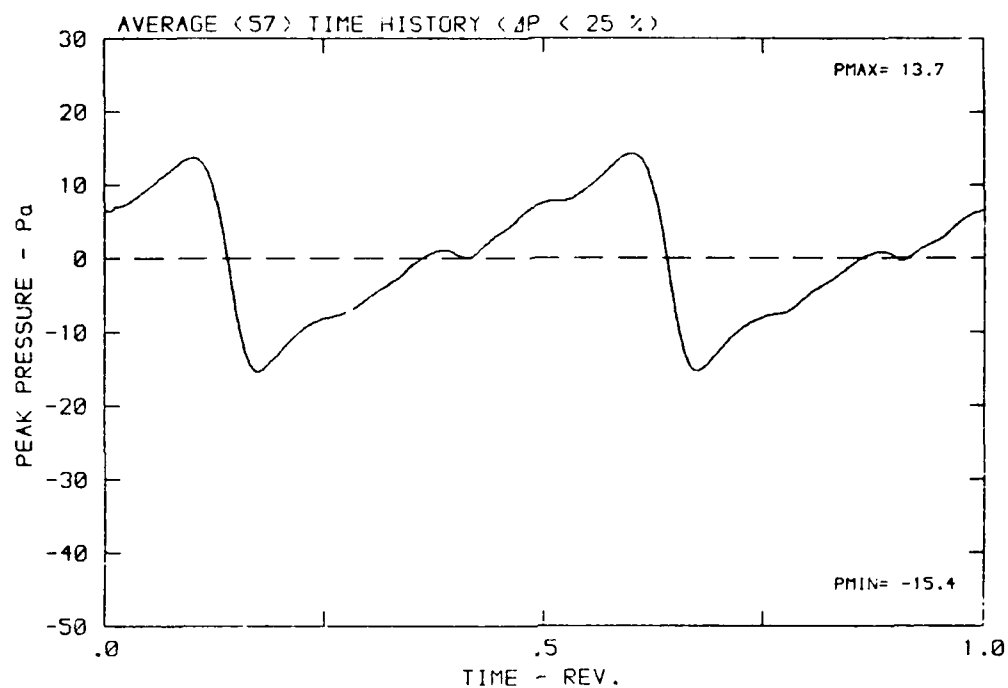
$\beta$ : 23.7° MH: .6738 n: 2100 rpm  $\nu$ : .231  $\phi$ : .0° T: 266.1 K





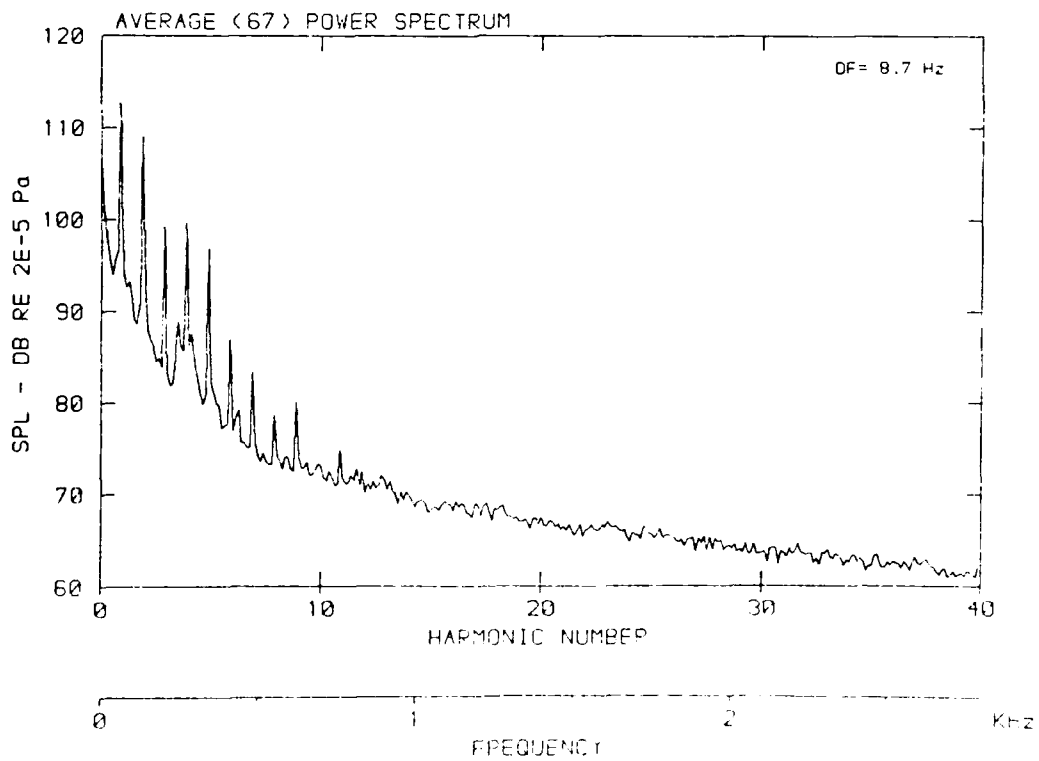
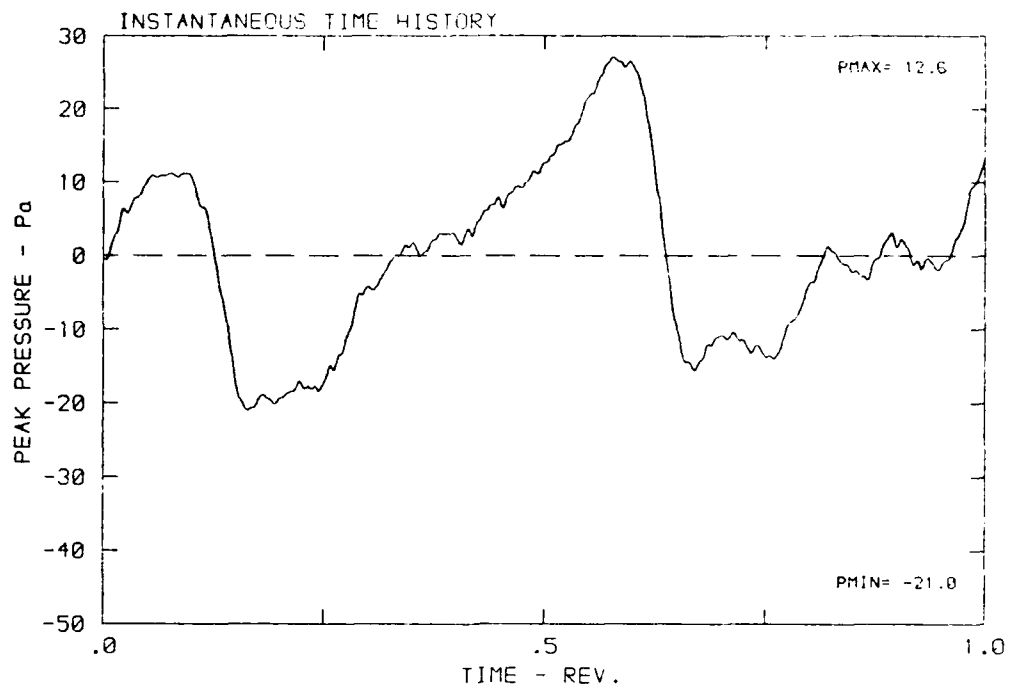
DATA POINT: FNC-11 RUN: 183 MP: 4

$\beta$ : 23.7° MH: .6738 n: 2100 rpm v/u: .231  $\phi$ : .0° T: 288.1 K



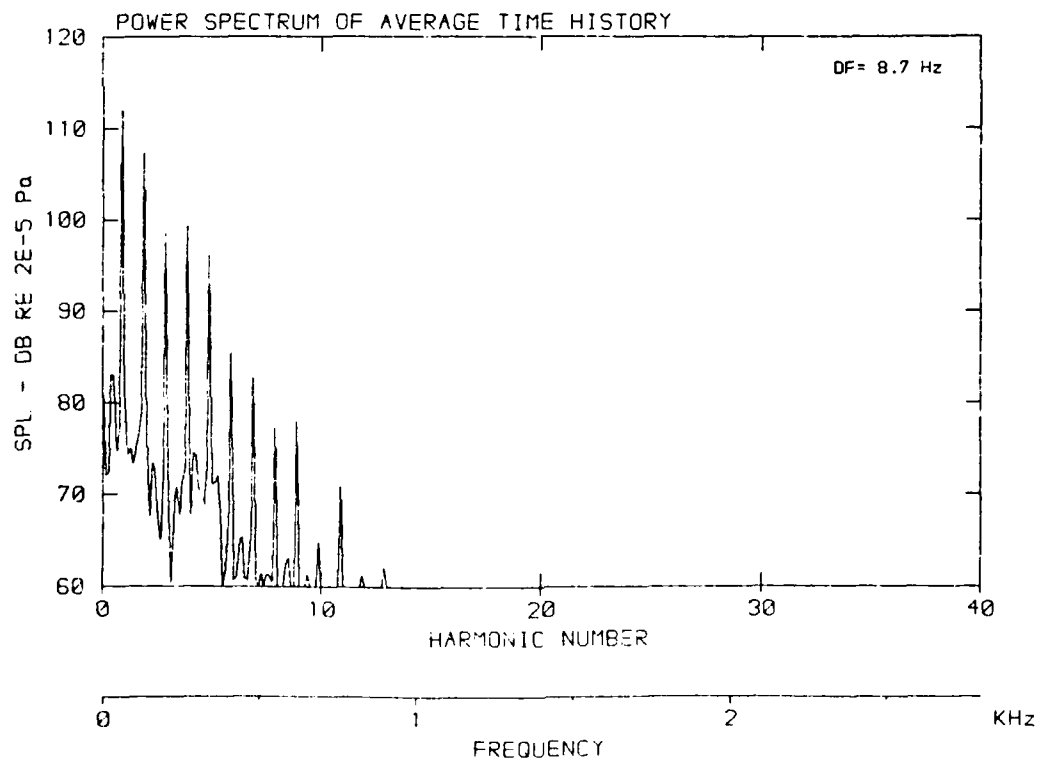
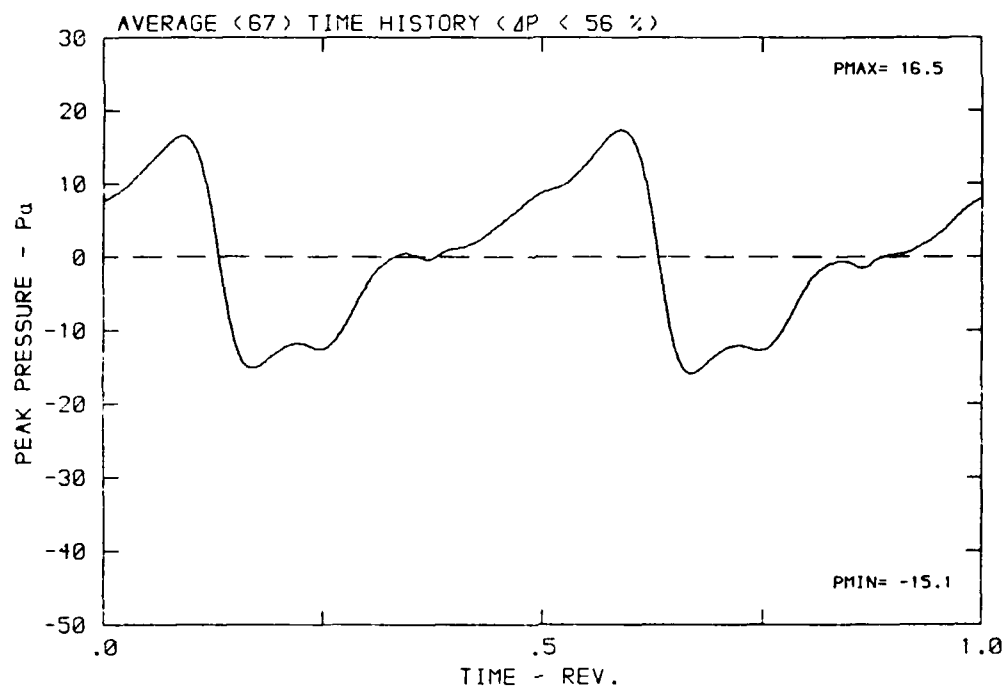
DATA POINT: FNC-11 RUN: 183 NF: 3

$\beta$ : 23.7° MH: .6738 n: 2100 rpm vru: .231  $\phi$ : .0° T: 299.1 K



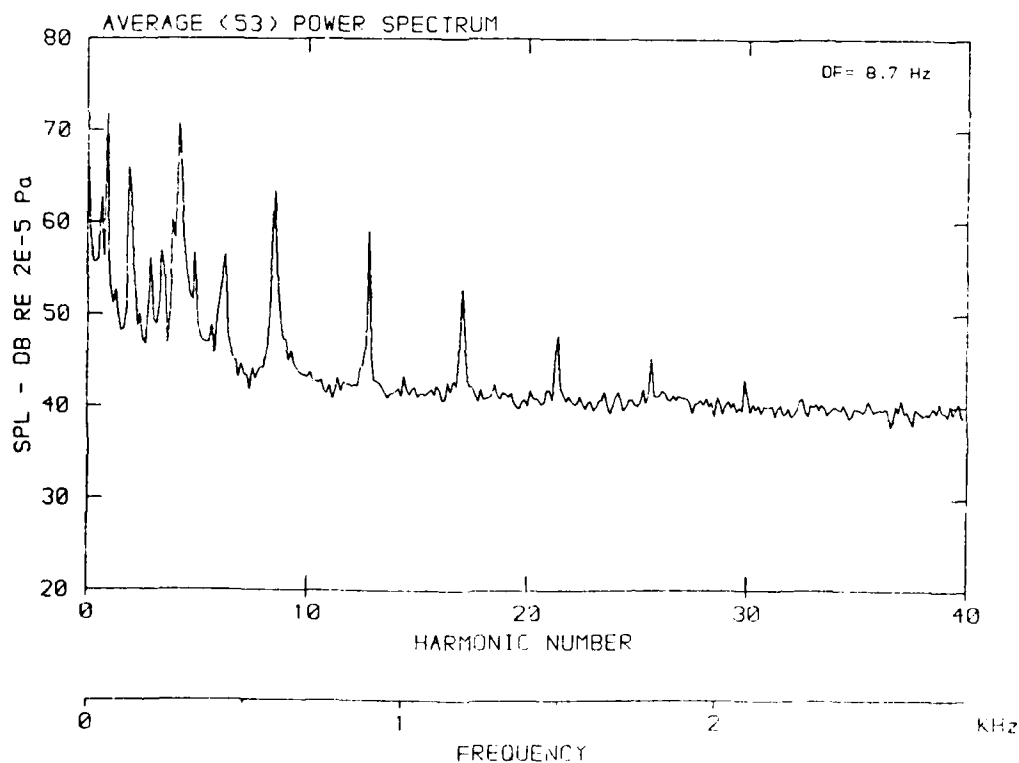
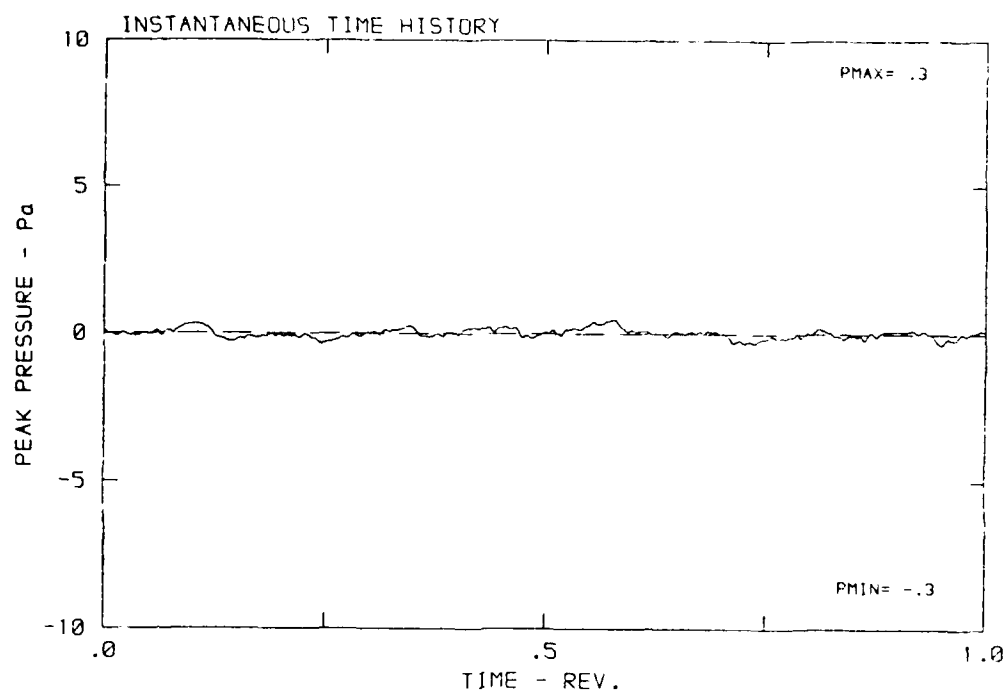
DATA POINT: FNC-11 RUN: 183 MP: 5

$\beta$ : 23.7° MH: .6738 n: 2100 rpm v/u: .231  $\phi$ : .0° T: 288.1 K



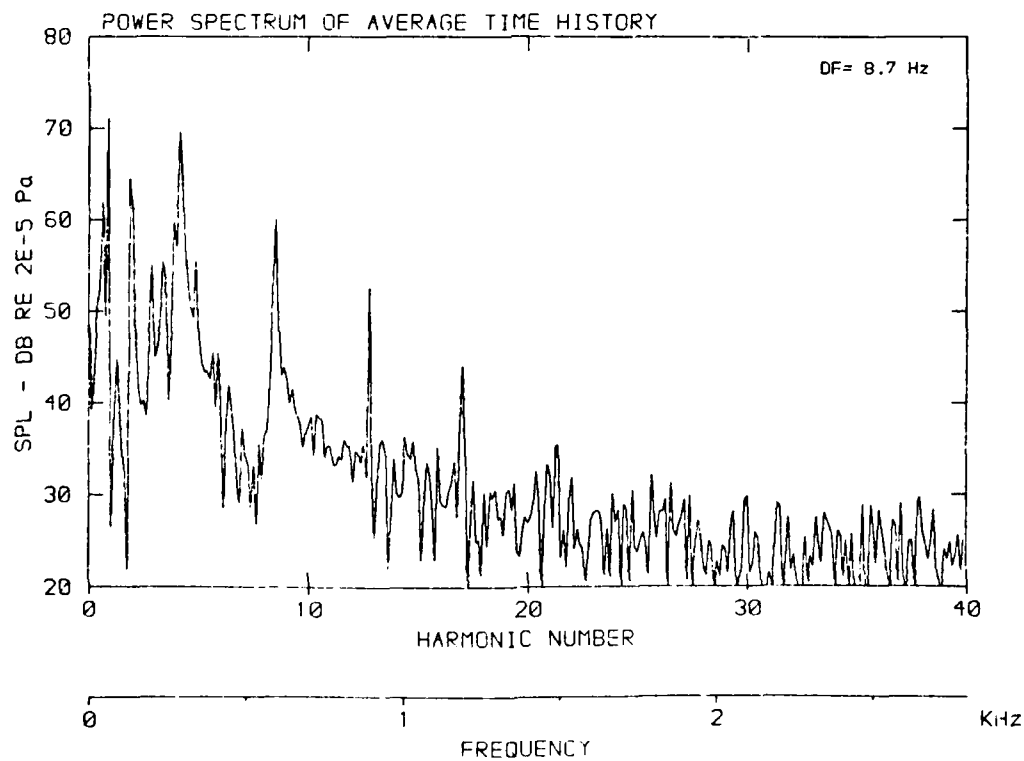
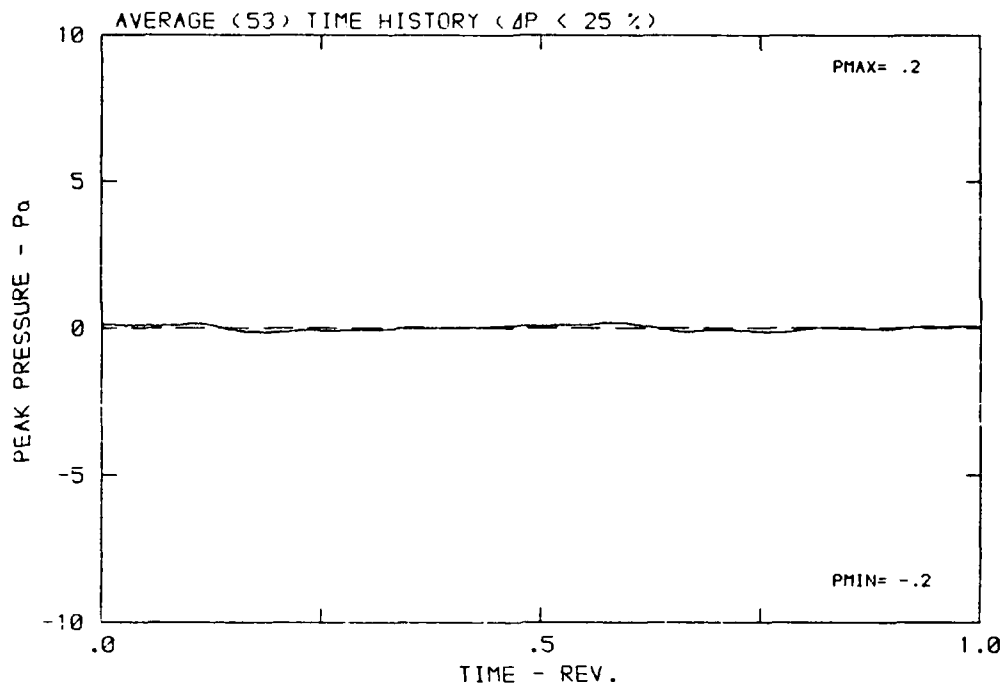
DATA POINT: FNC-11 RUN: 183 MP: 5

$\beta$ : 23.7° MH: .6738 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 288.1 K



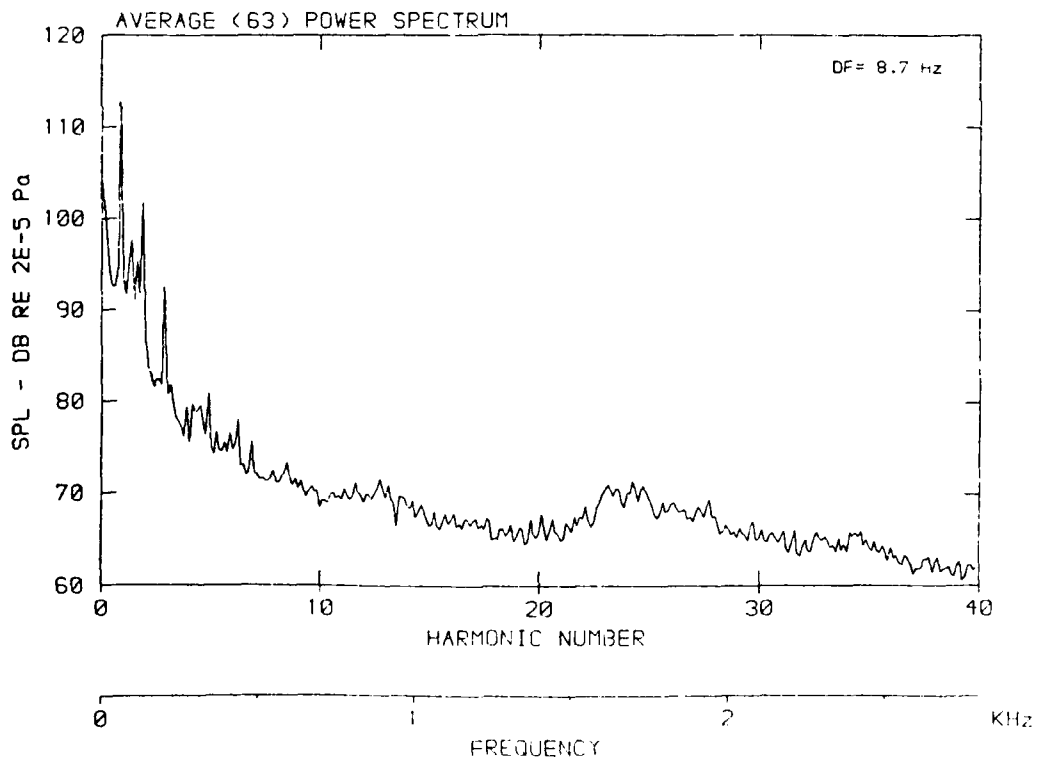
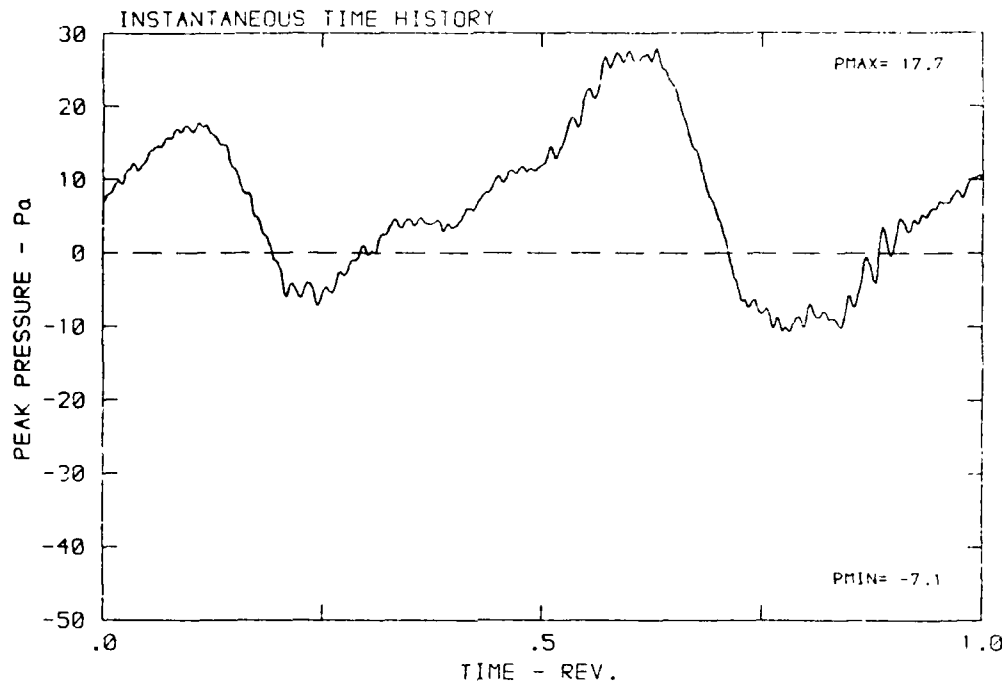
DATA POINT: FNC-11 RUN: 183 MP: 6

$\beta$ : 23.7° MH: .6738 n: 2100 rpm v/u: .231  $\phi$ : .0° T: 288.1 K



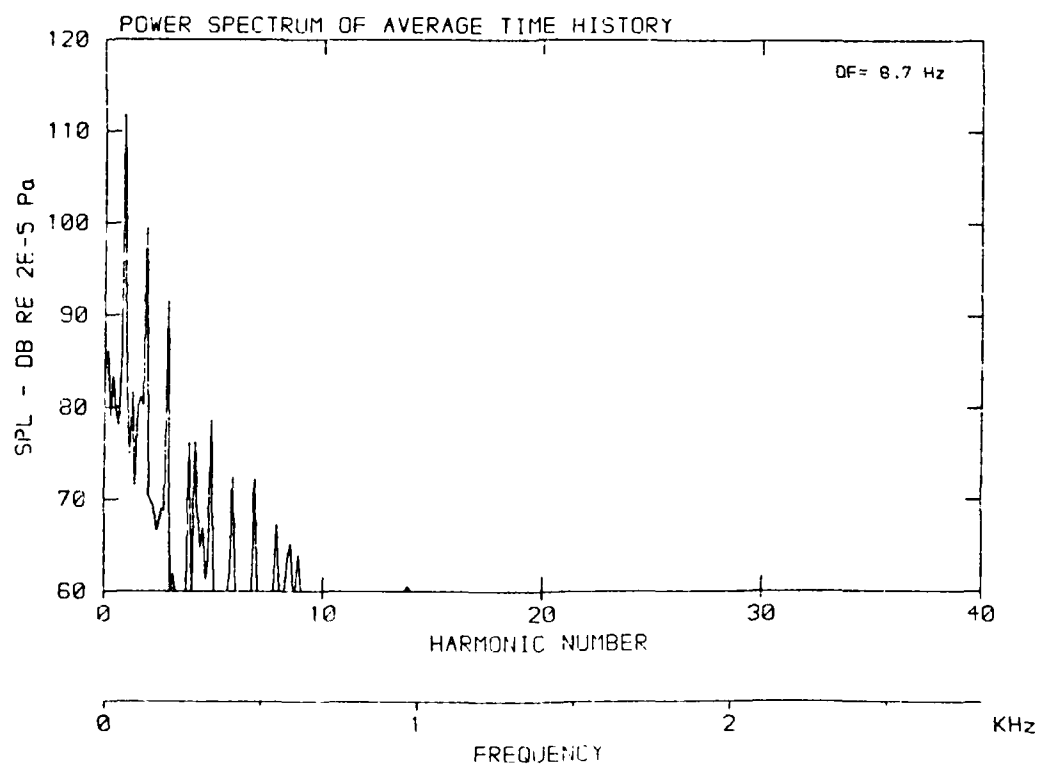
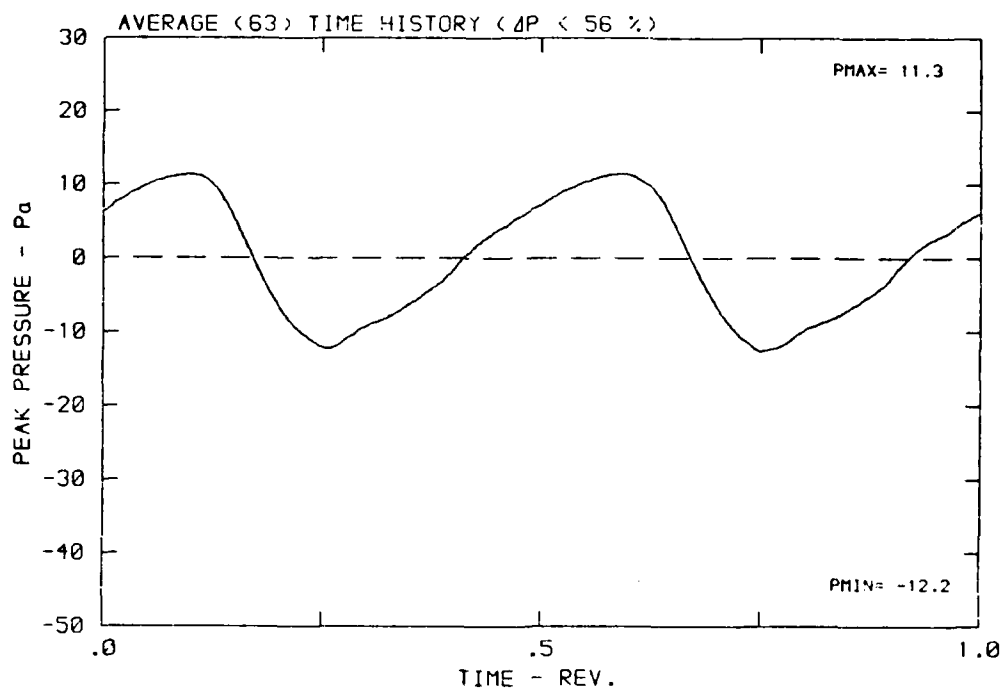
DATA POINT: FNC-11 RUN: 183 MP: 7

$\beta$ : 23.7° MH: .6738 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 288.1 K



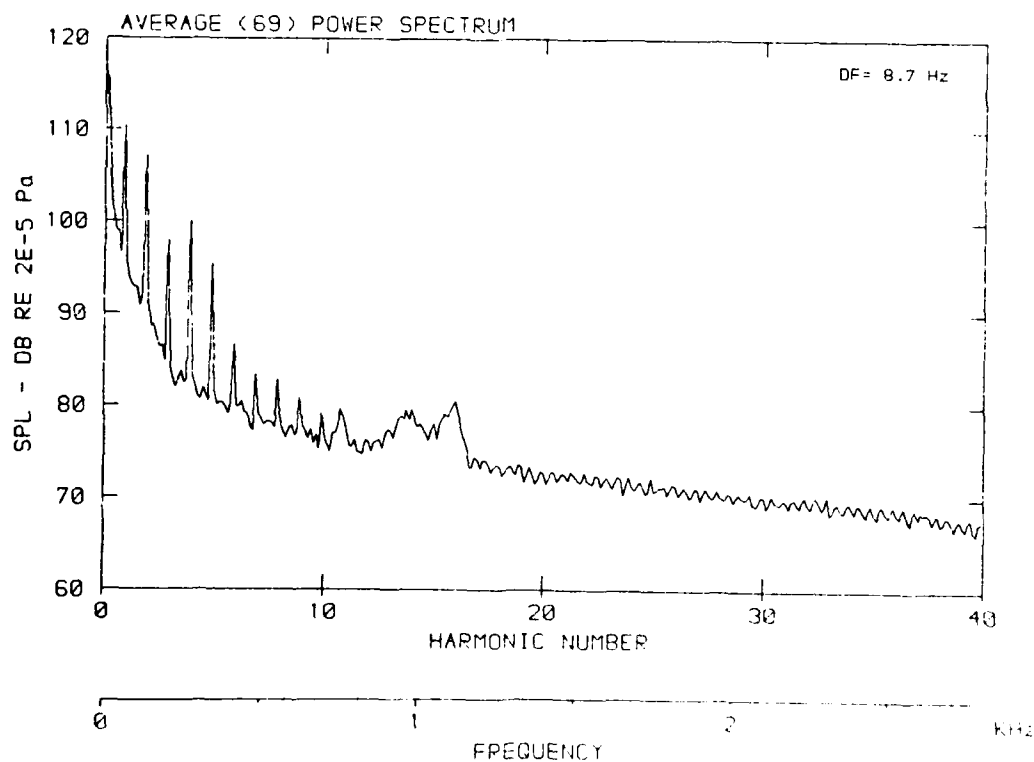
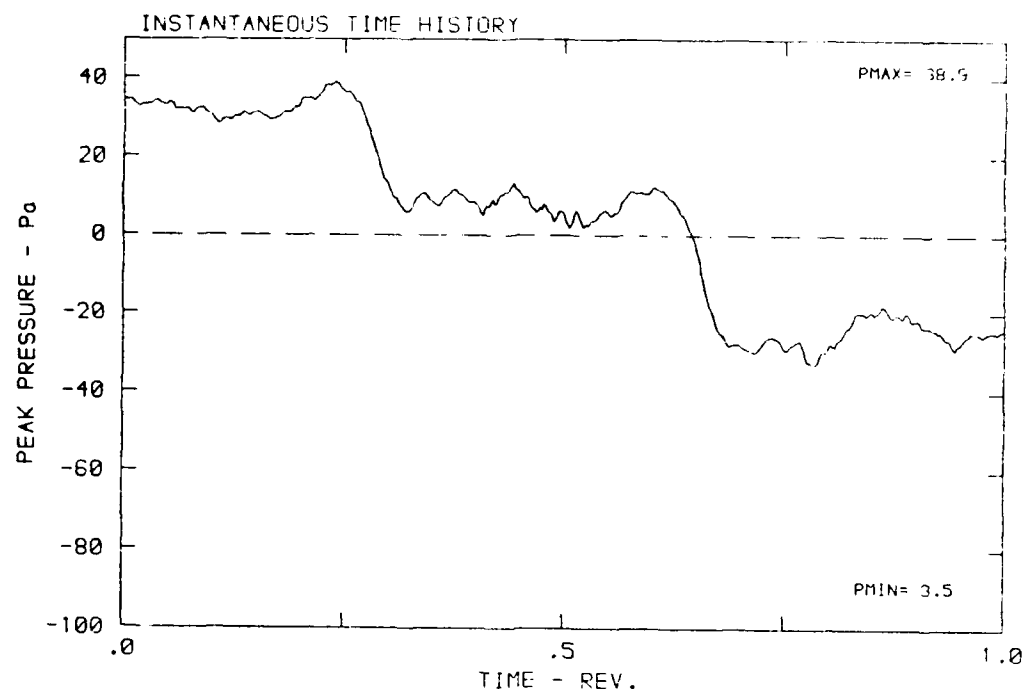
DATA POINT: FNC-11 RUN: 183 MP: 7

$\beta$ : 23.7° MH: .6738 n: 2100 rpm v/u: .231  $\phi$ : .0° T: 288.1 K



DATA POINT: FNC-11 RUN: 183 MP: 5

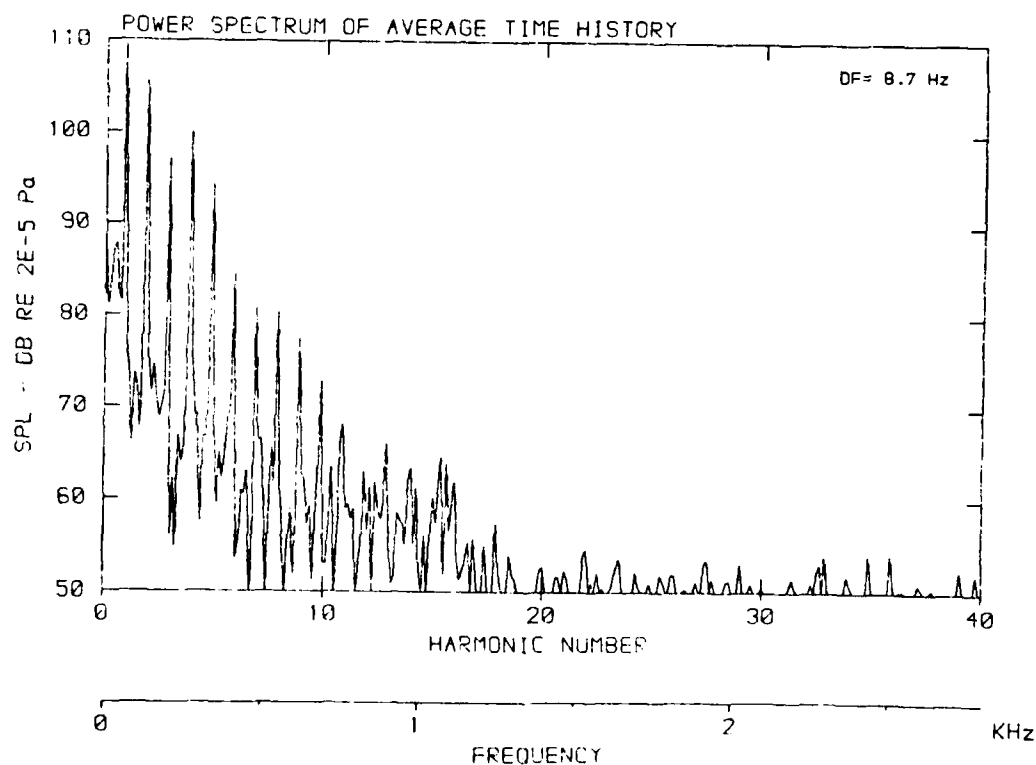
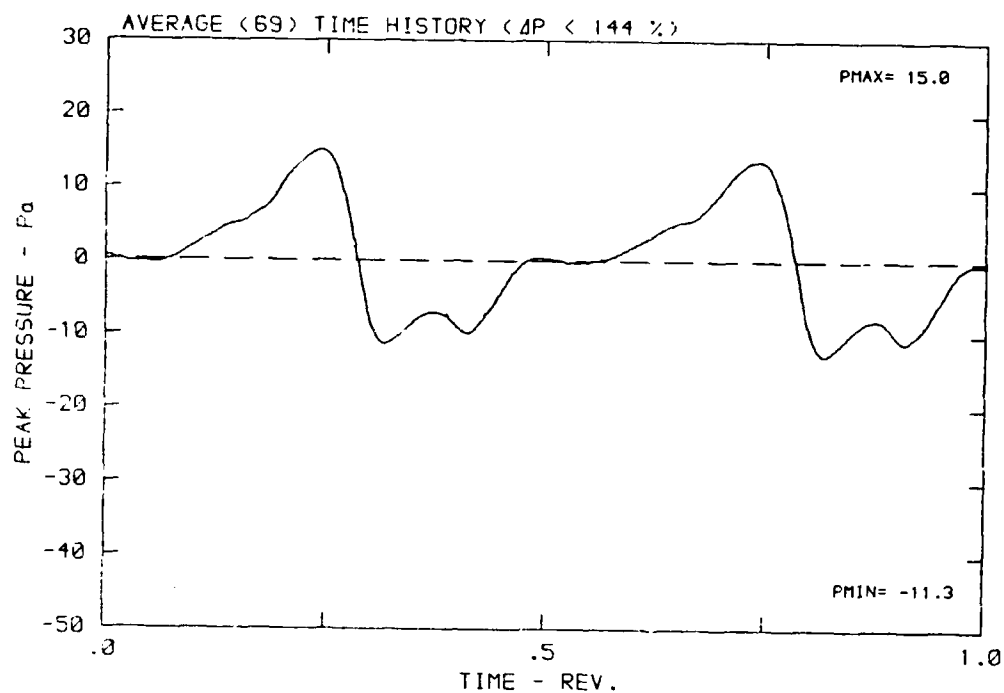
$\beta$ : 23.7° MH: .6738 n: 2100 rpm v/u: .231  $\phi$ : .0° T: 298.1 K





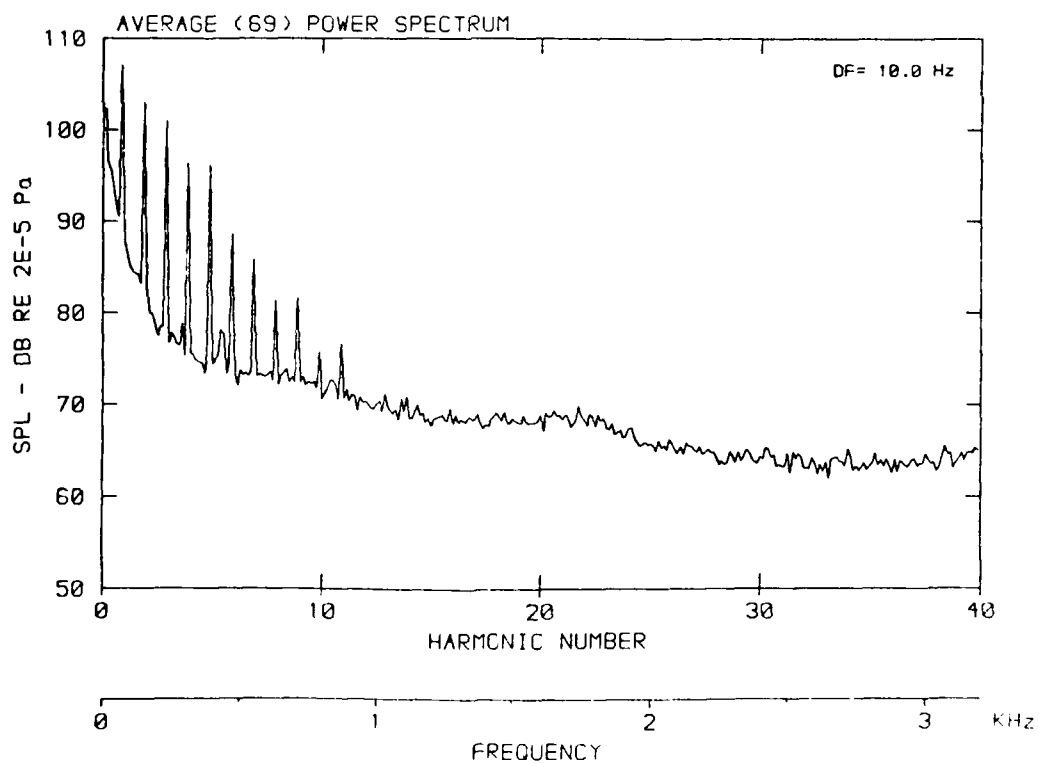
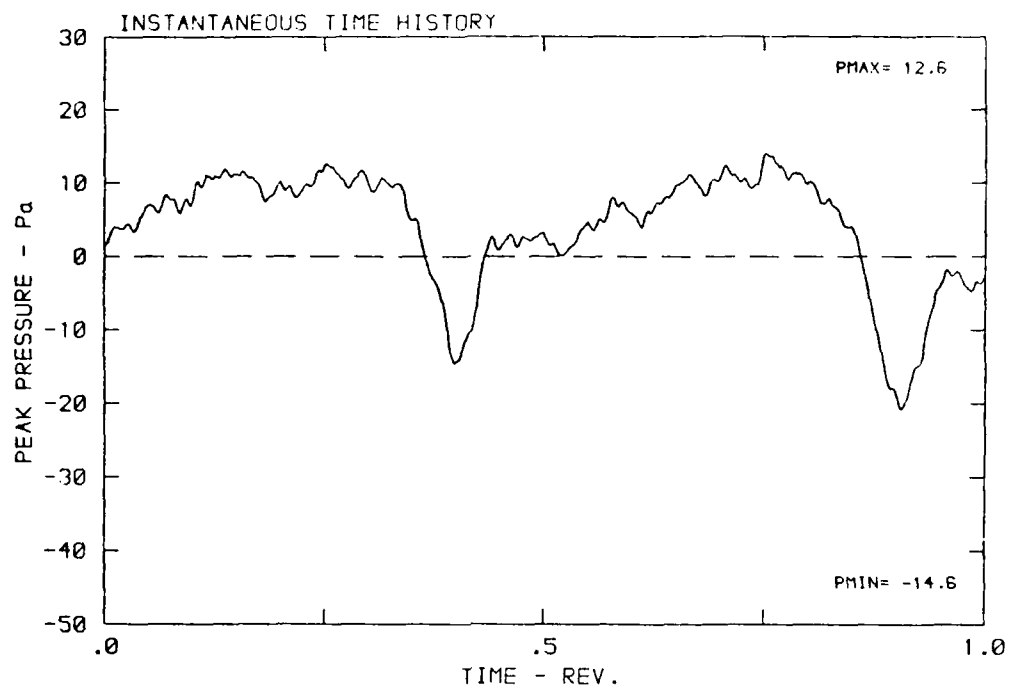
DATA POINT: FNC-11 RUN: 183 MP: 9

$\beta$ : 23.7° MH: .6738 n: 2100 rpm  $v/u$ : .231  $\phi$ : .0° T: 288.1 K



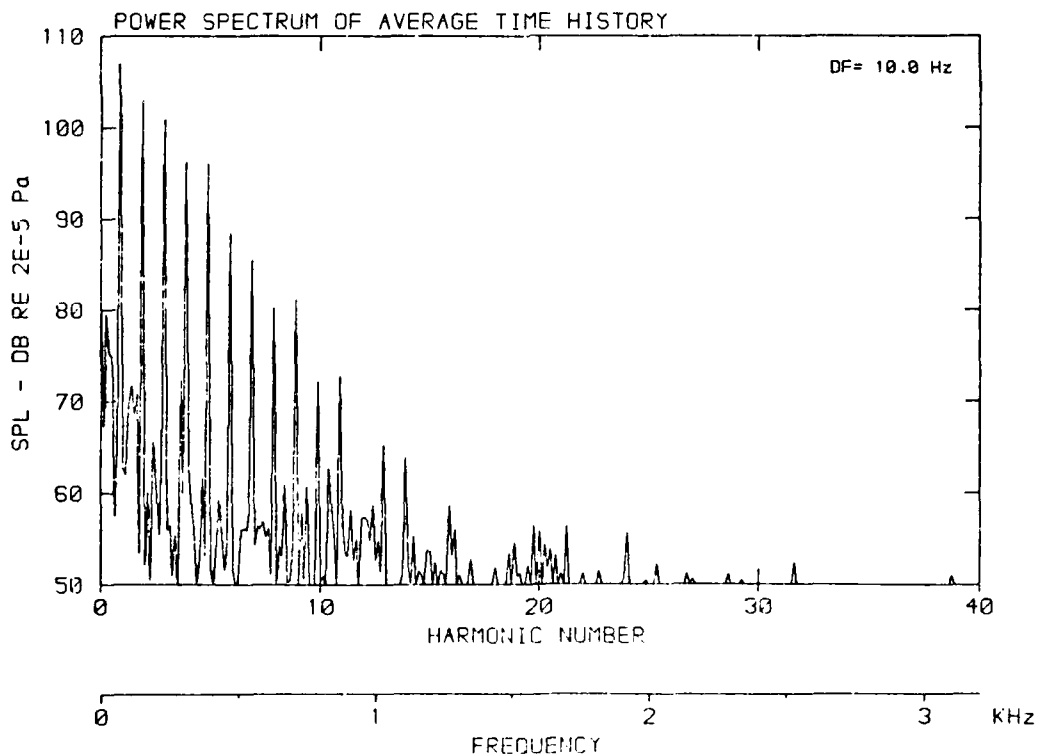
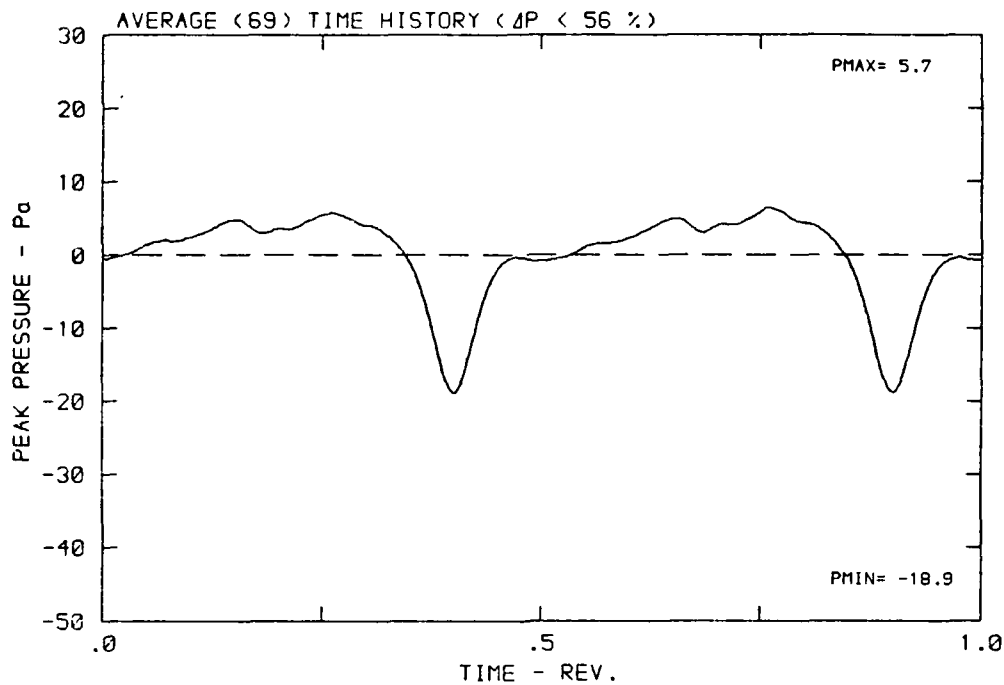
DATA POINT: FNC-12 RUN: 184 MF: 1

$\beta$ : 23.7° MH: .7751 n: 2400 rpm v/u: .263  $\phi$ : .0° T: 288.7 K



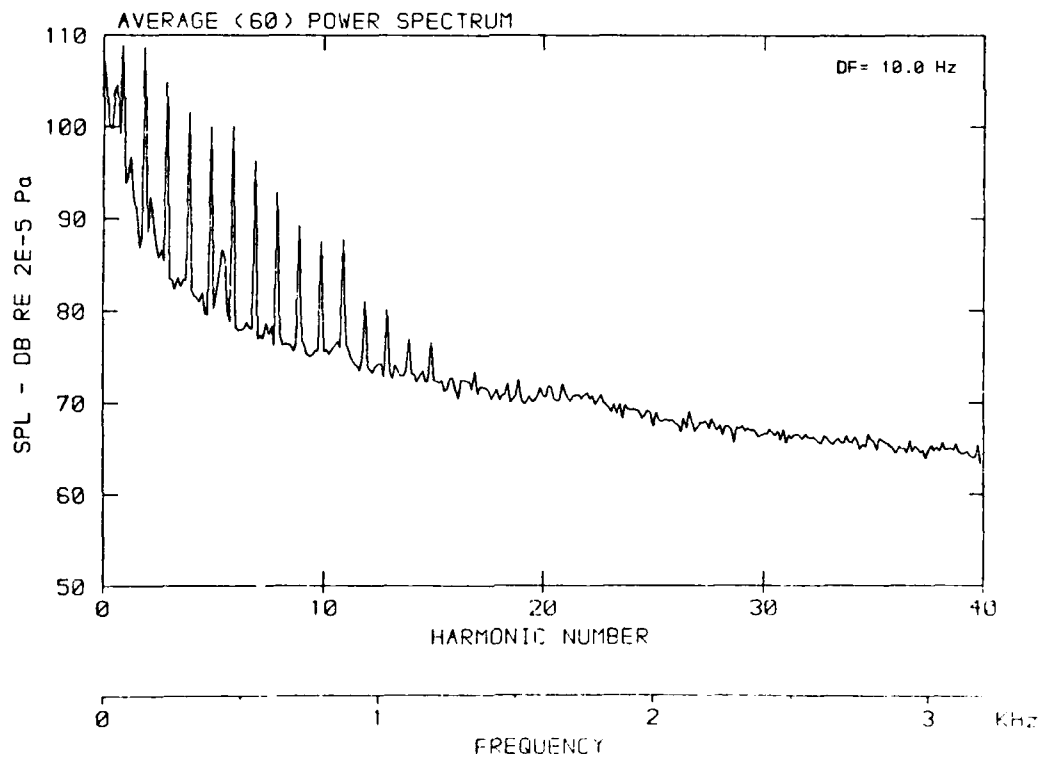
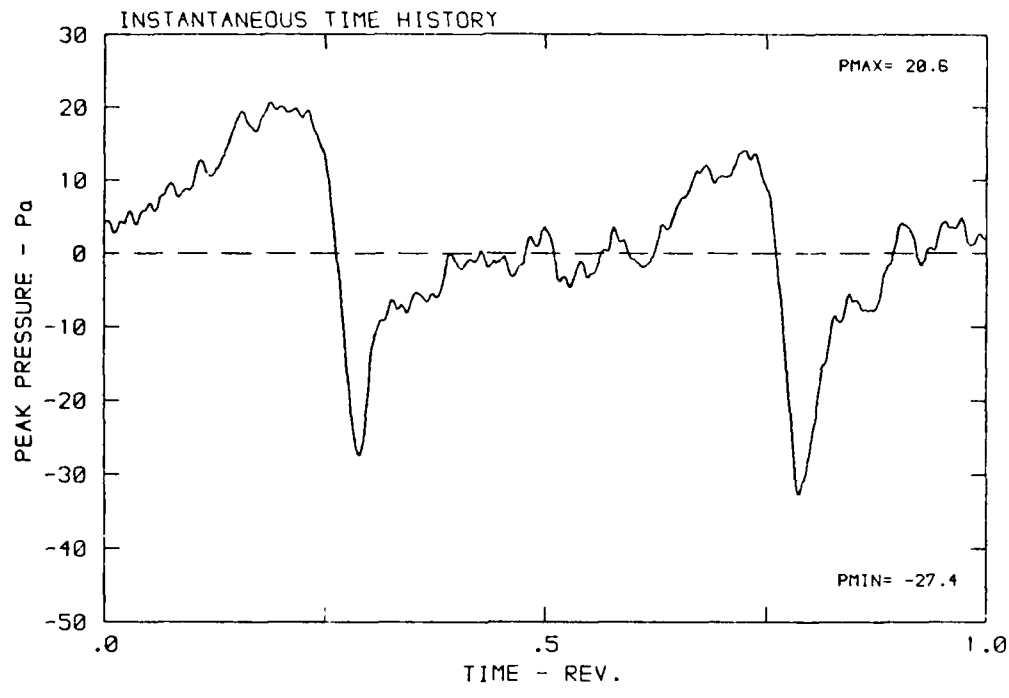
DATA POINT: FNC-12 RUN: 184 MP: 1

$\beta$ : 23.7° MH: .7751 n: 2400 rpm v/u: .263  $\phi$ : .0° T: 288.7 K



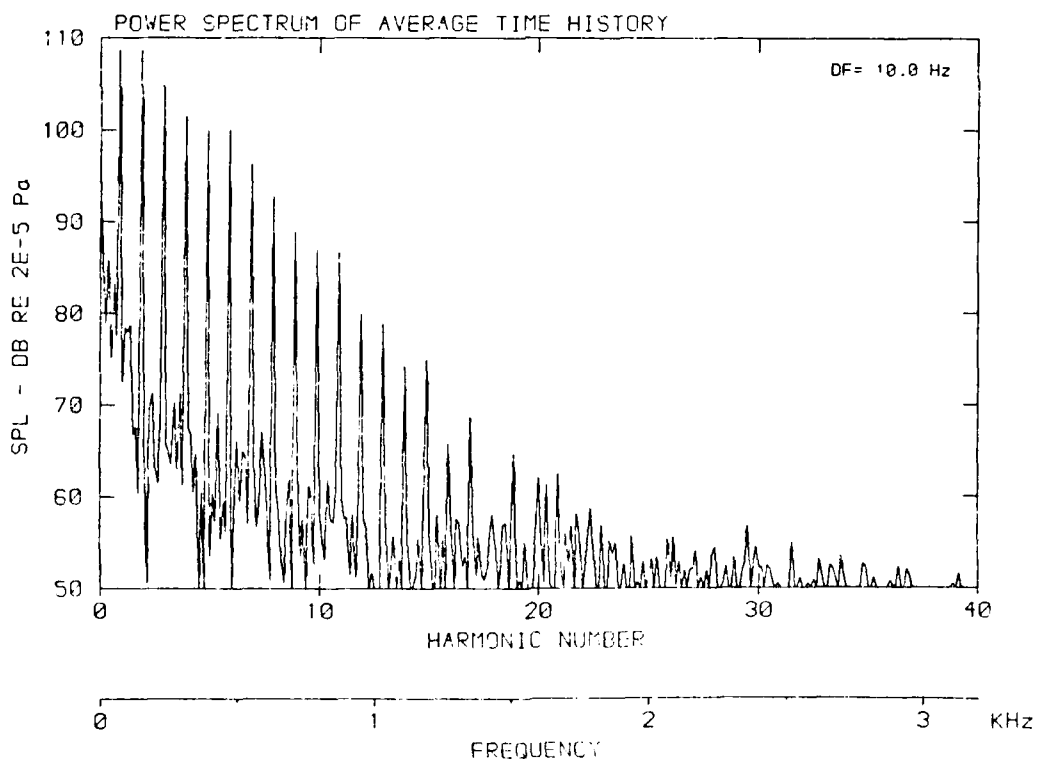
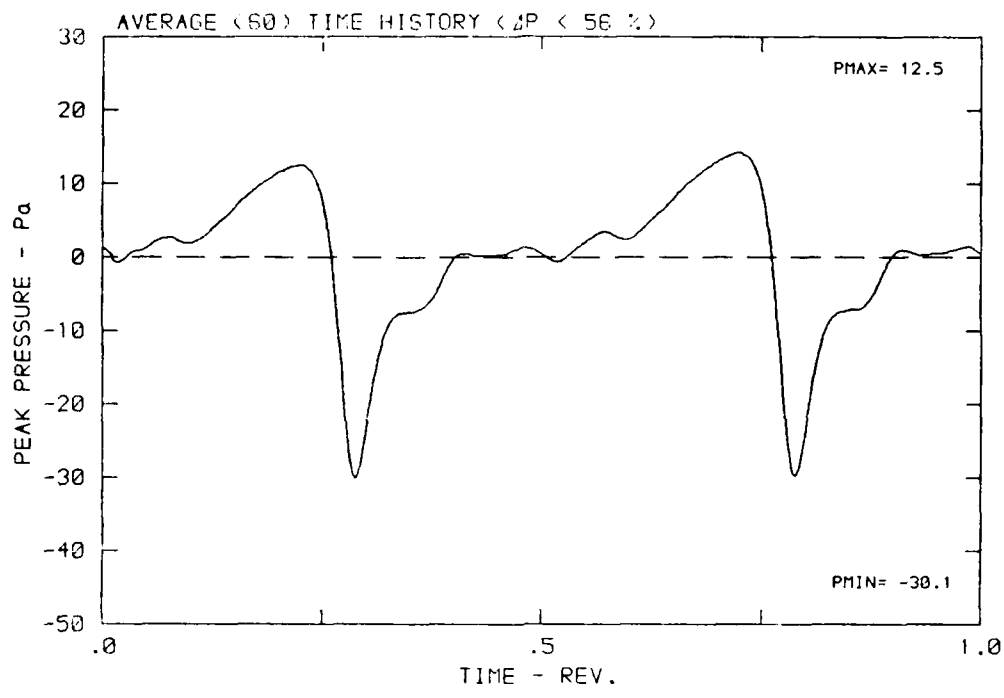
DATA POINT: FNC-12 RUN: 184 MP: 2

$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 298.7 K



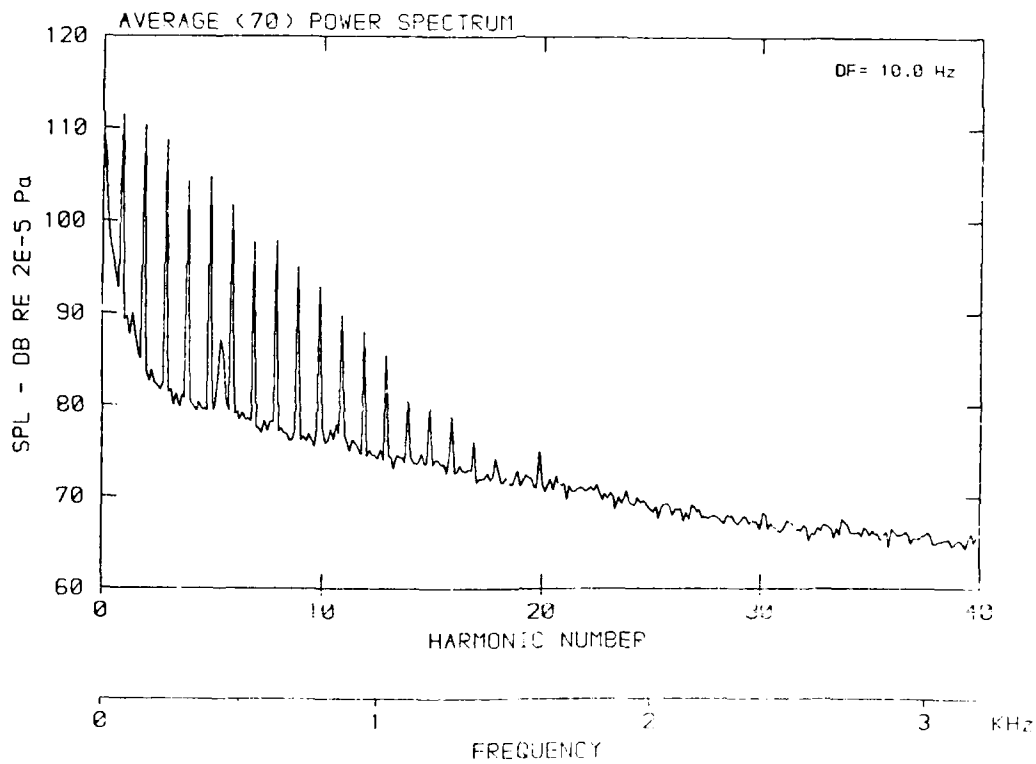
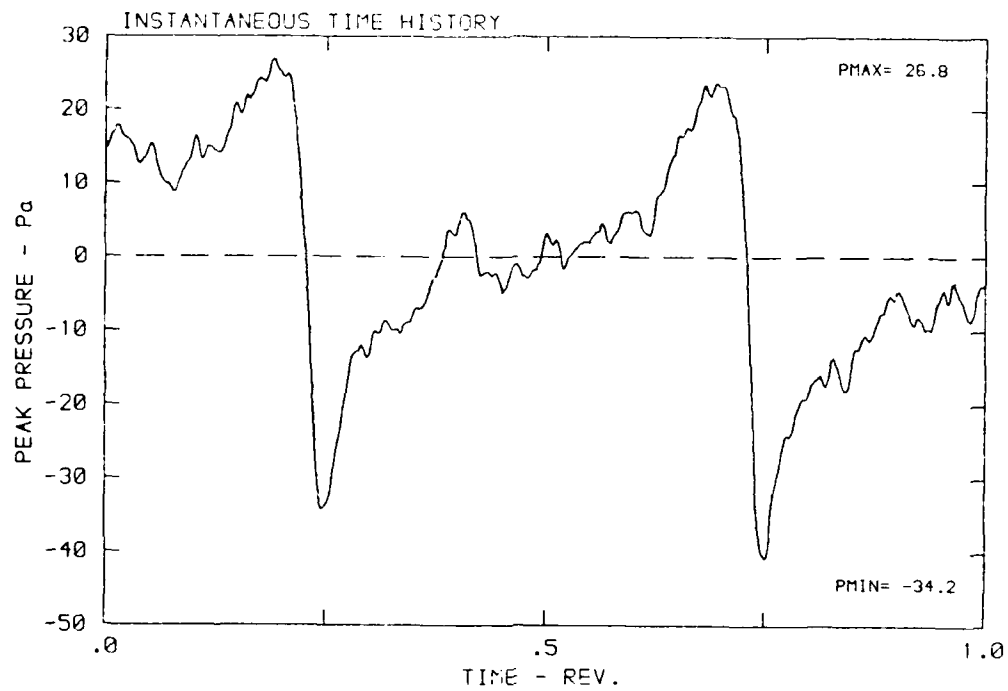
DATA POINT: FNC-12 RUN: 184 MP: 2

$\beta$ : 23.7° MH: .7751 n: 2400 rpm v/u: .263  $\phi$ : .0° T: 288.7 K



DATA POINT: FNC-12 RUN: 184 MP: 3

$\beta$ : 23.7° MH: .7751 n: 2400 rpm v/u: .263  $\phi$ : .0° T: 288.7 K



AD-A174 982

DFVLR/FAR (DEUTSCHE FORSCHUNGS-UND VERSUCHSANSTALT FUER  
LUFT UND RAUMFAHR (U) DEUTSCHE FORSCHUNGS- UND  
VERSUCHSANSTALT FUER LUFT- UND RAUMF

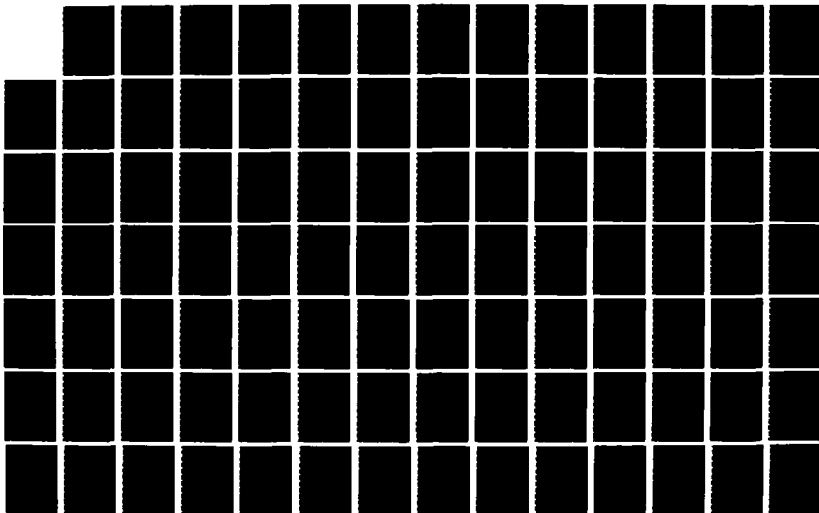
2/3

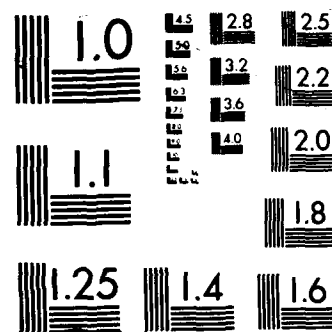
UNCLASSIFIED

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F/G 20/1

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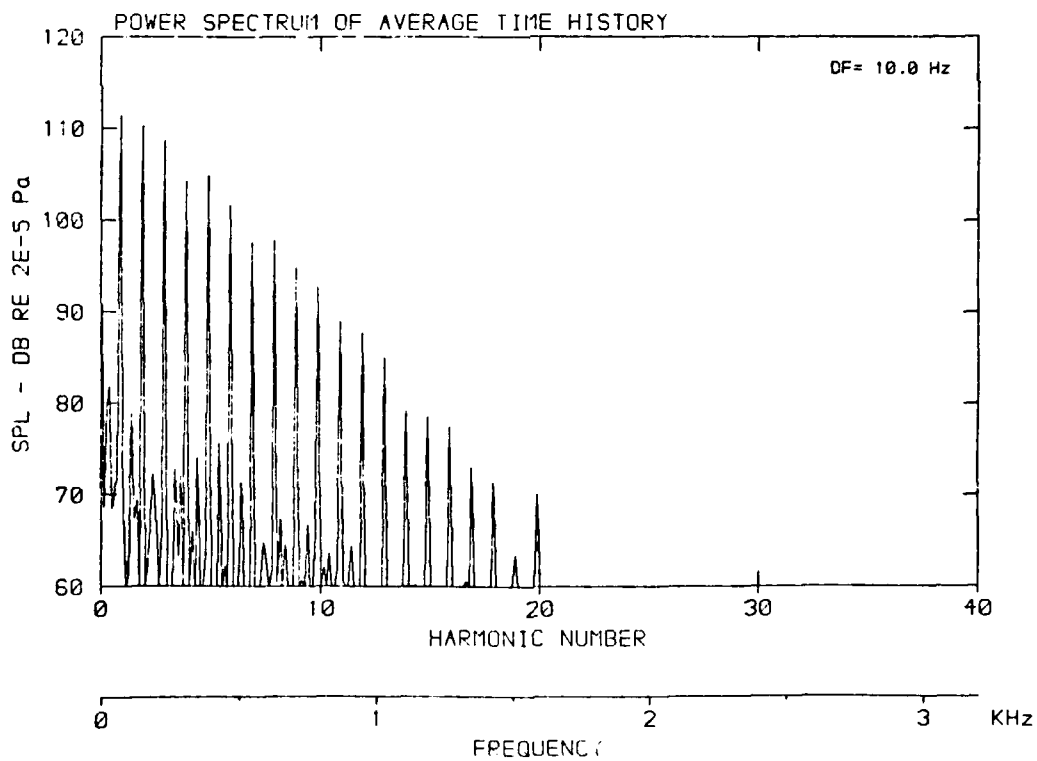
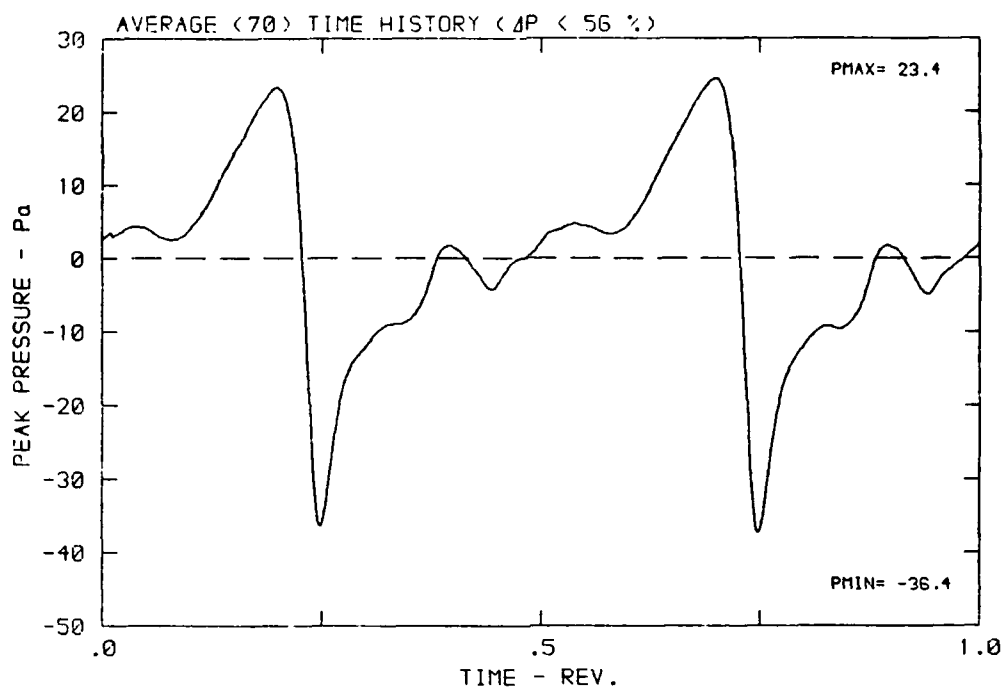


MICROCOPY RESOLUTION TEST CHART



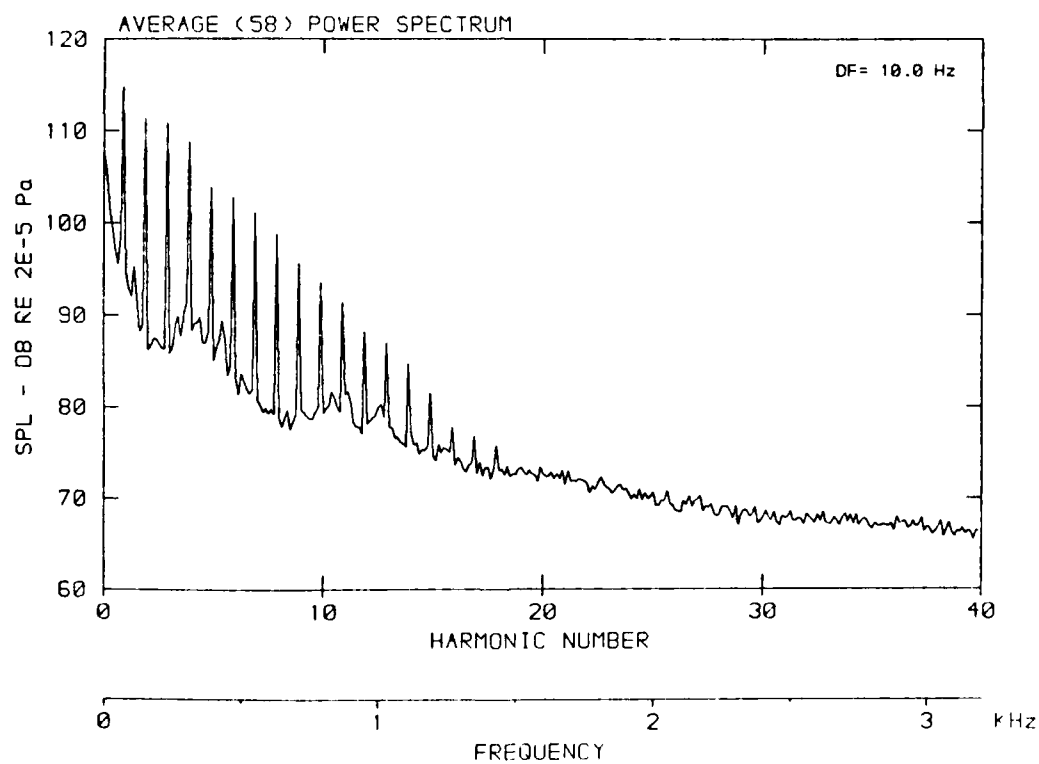
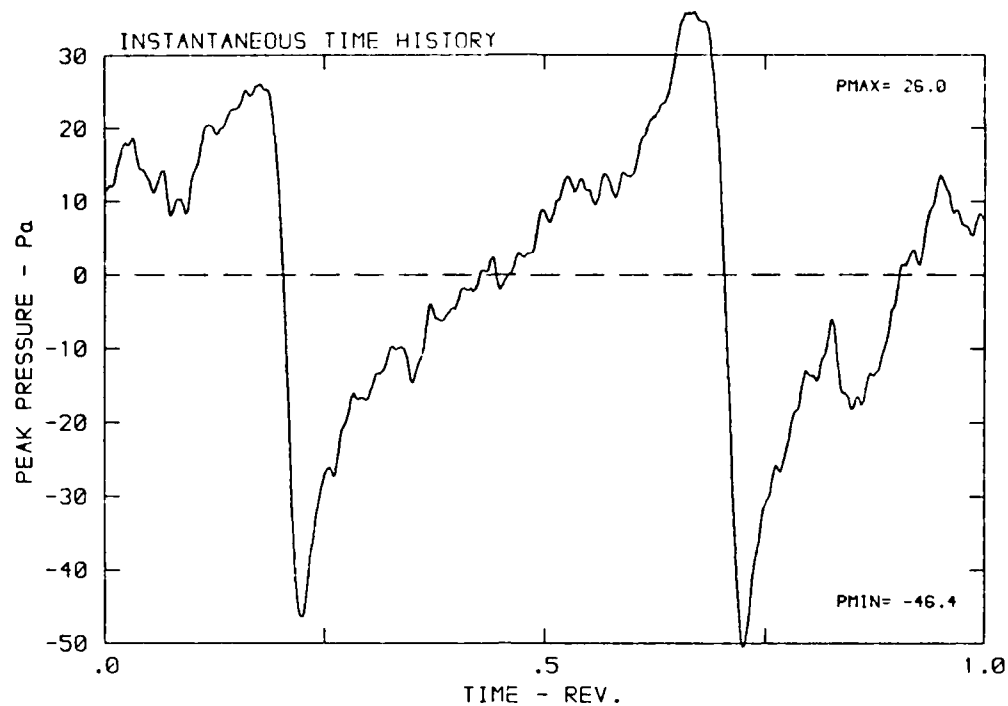
DATA POINT: FNC-12 RUN: 184 MP: 3

$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 288.7 K



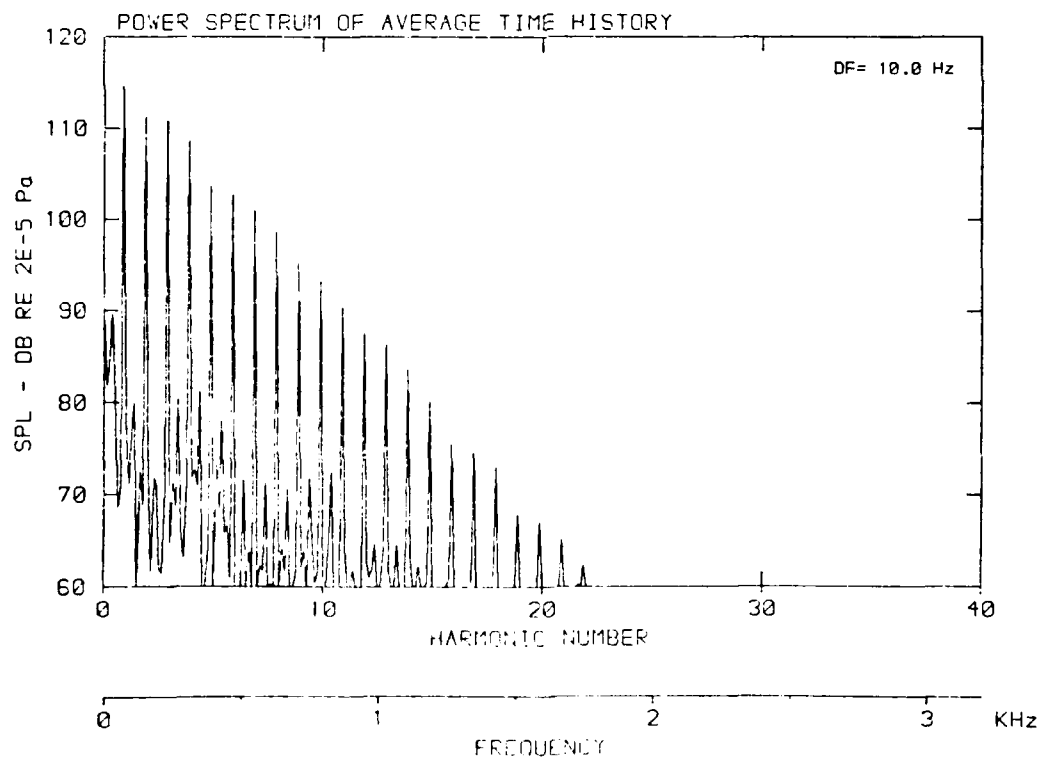
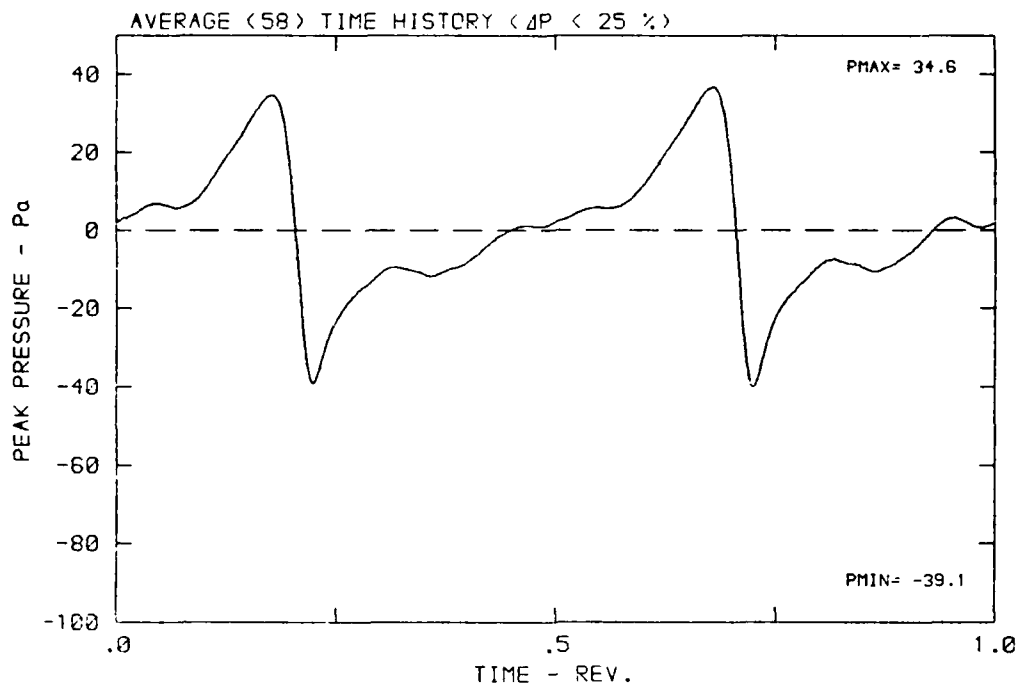
DATA POINT: ENC-12 RUN: 184 MP: 4

$\beta$ : 23.7° MH: .7751 n: 2400 rpm v/u: .263  $\phi$ : .0° T: 288.7 K



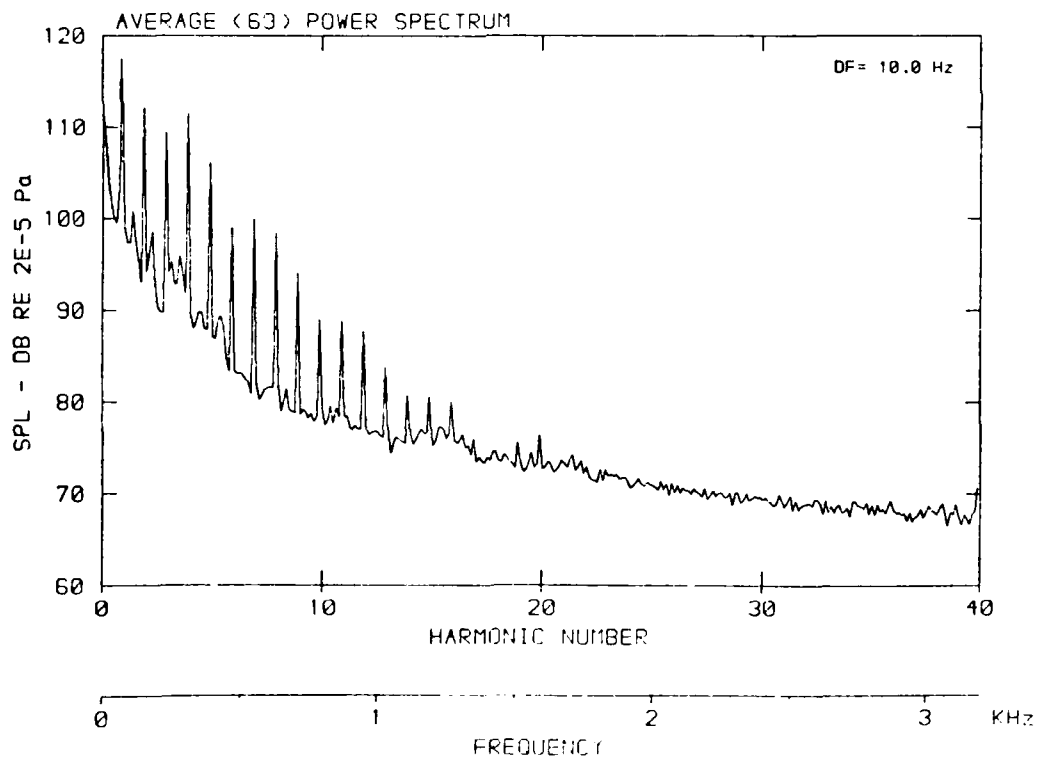
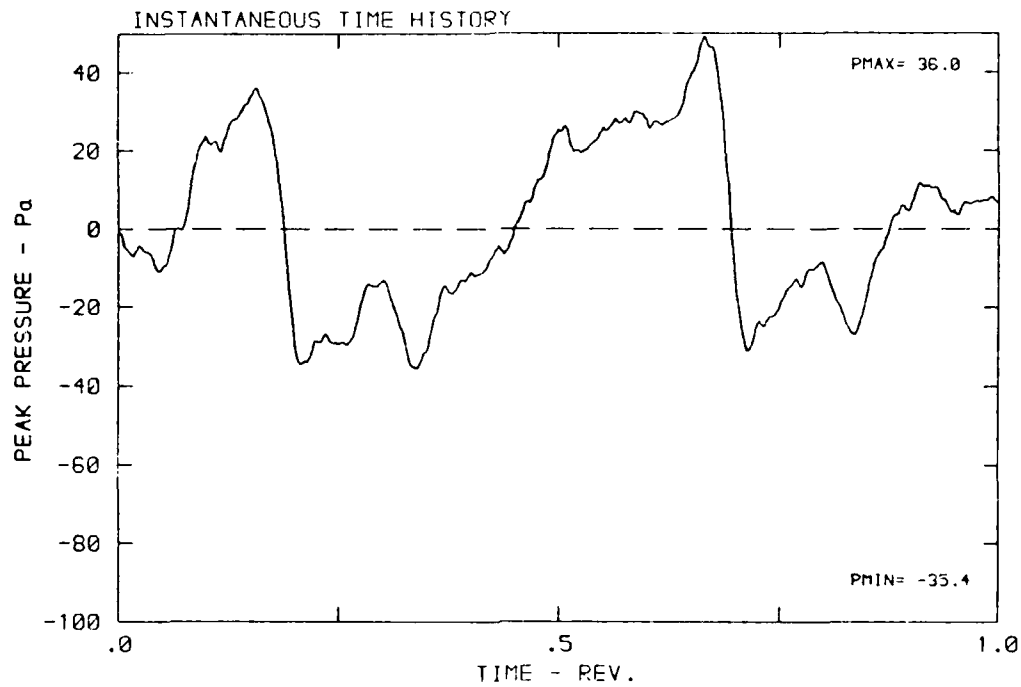
DATA POINT: FNC-12 RUN: 184 MP: 4

$\beta$ : 23.7° MH: .7751 n: 2400 rpm v/u: .263  $\phi$ : .0° T: 288.7 K



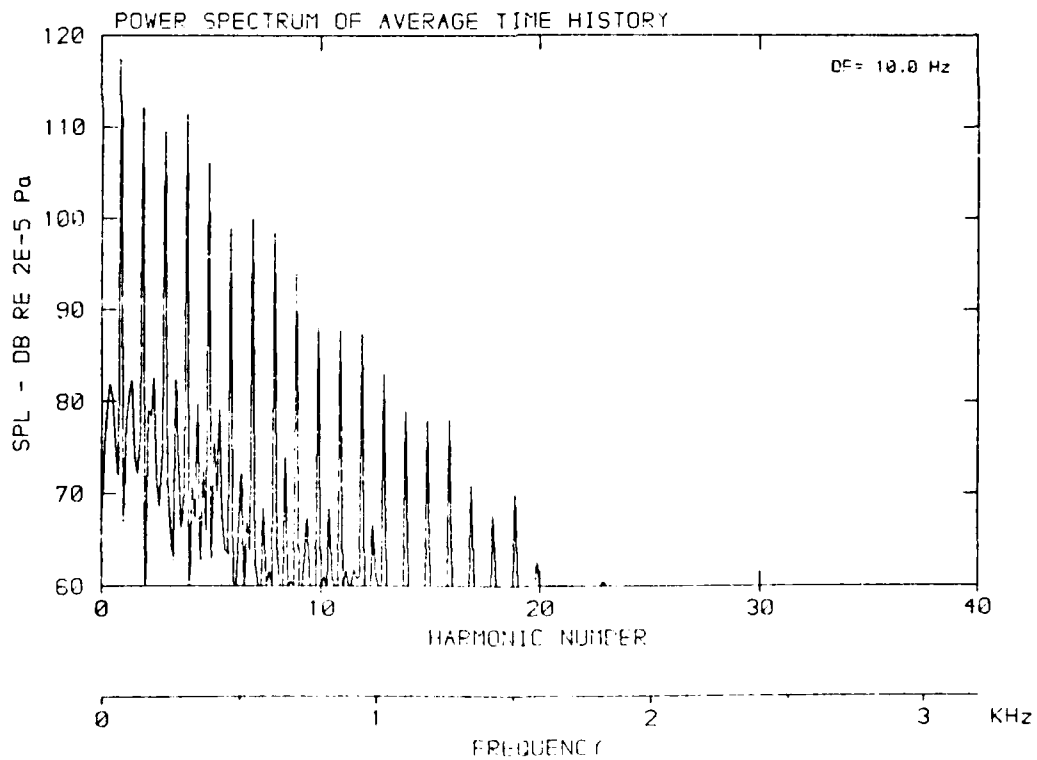
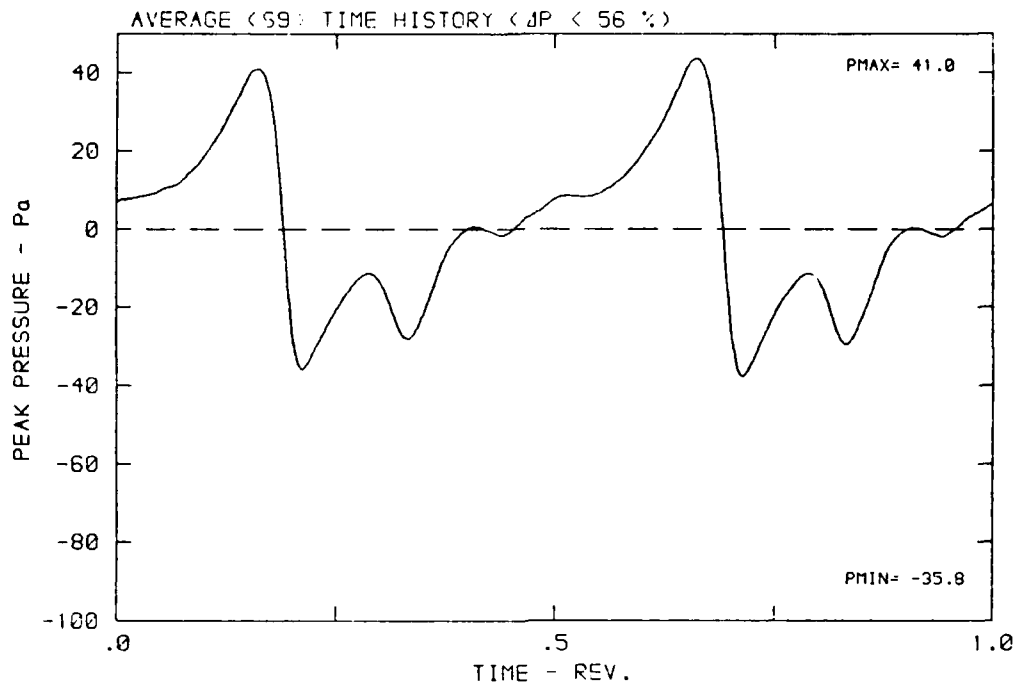
DATA POINT: FNC-12 RUN: 184 MP: 5

$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 293.7 K



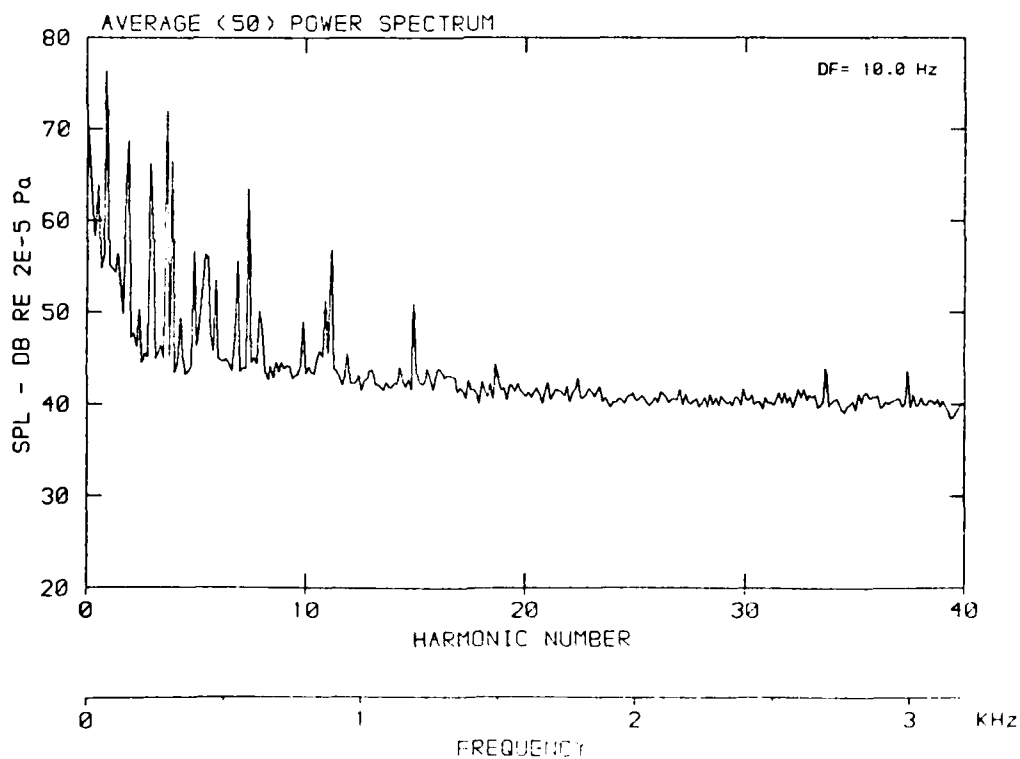
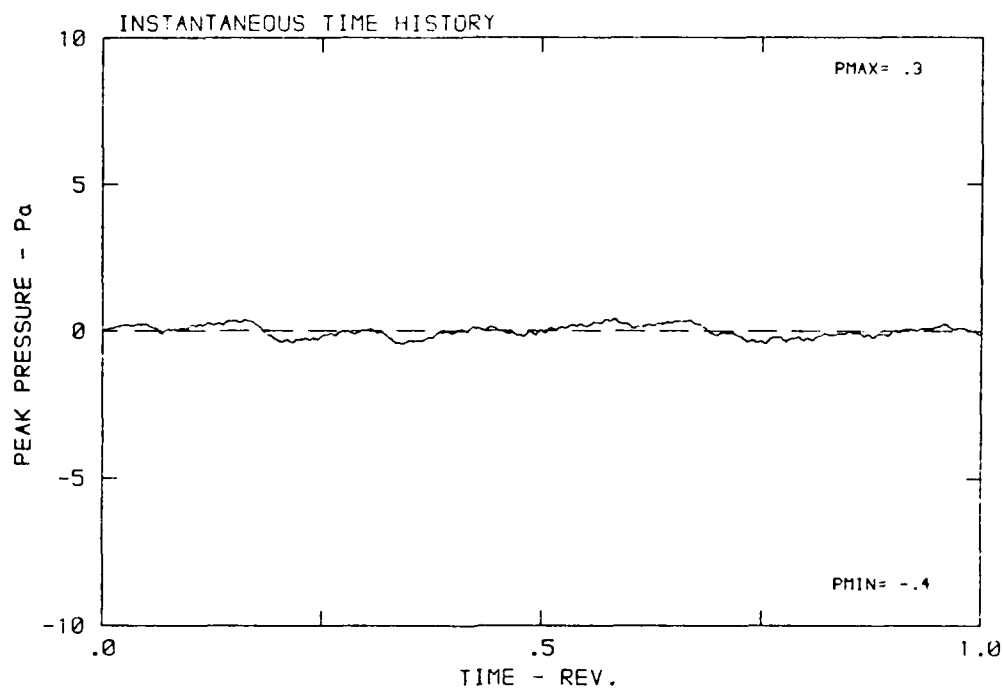
DATA POINT: FNC-12 RUN: 184 MP: 5

$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 288.7 K



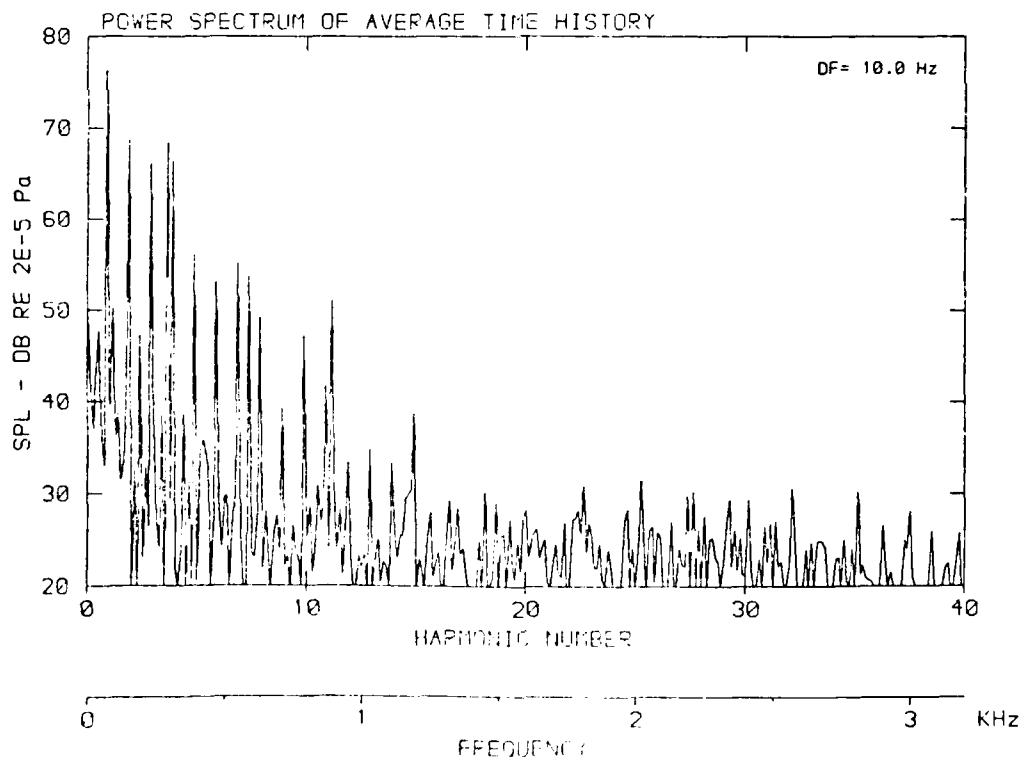
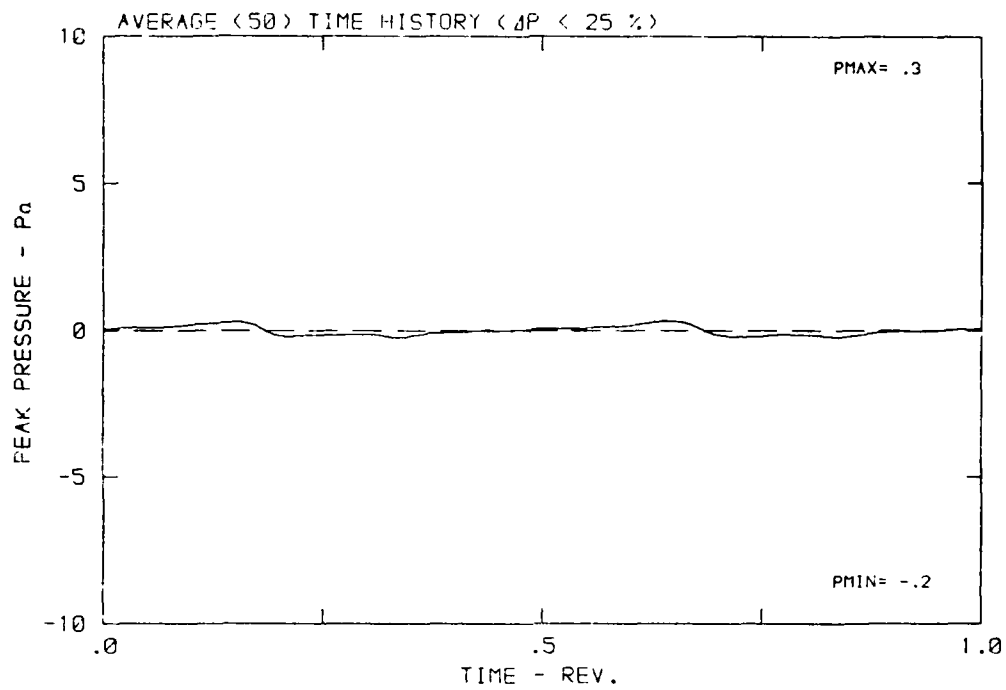
DATA POINT: FNC-12 RUN: 184 MP: 6

$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 298.7 K



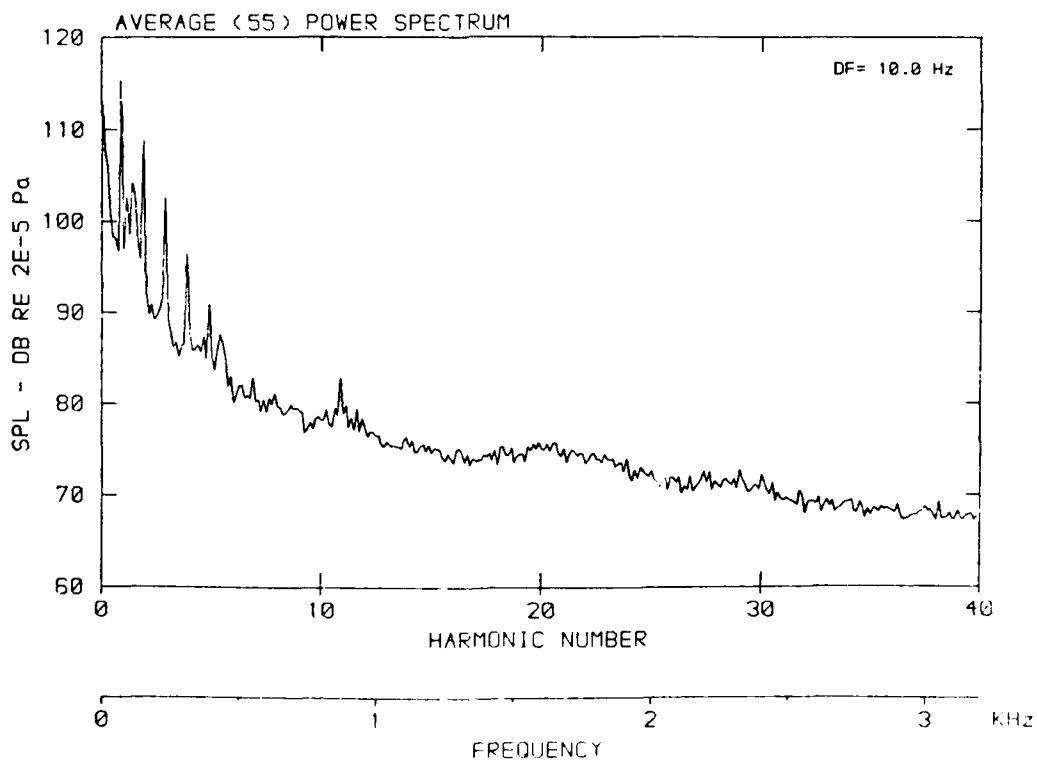
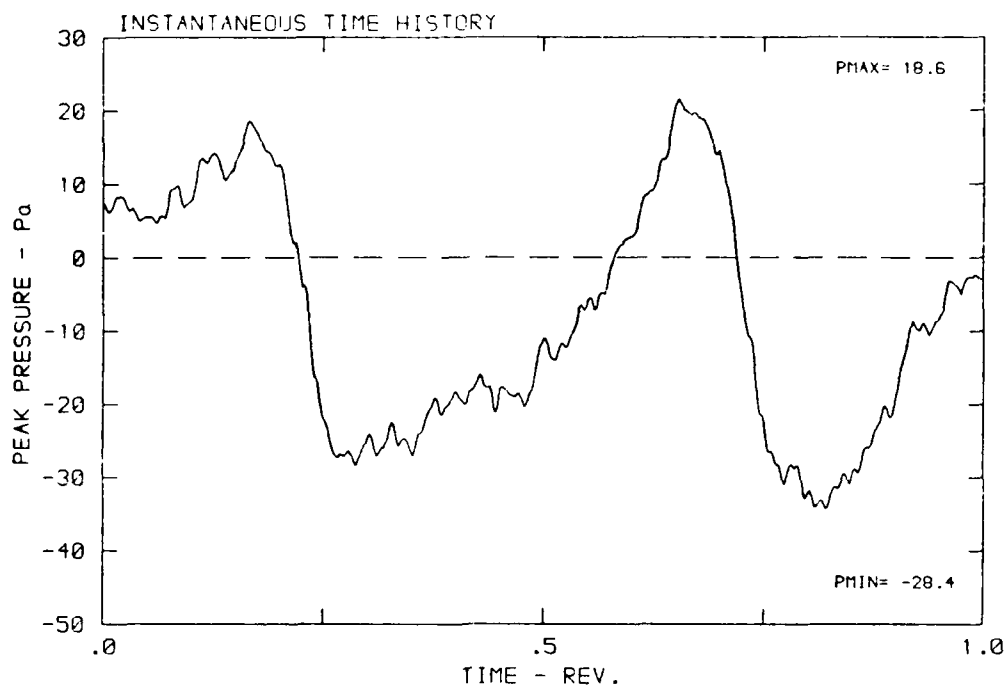
DATA POINT: FNC-12 RUN: 184 MP: 6

$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 288.7 K



DATA POINT: FNC-12 RUN: 184 MP: 7

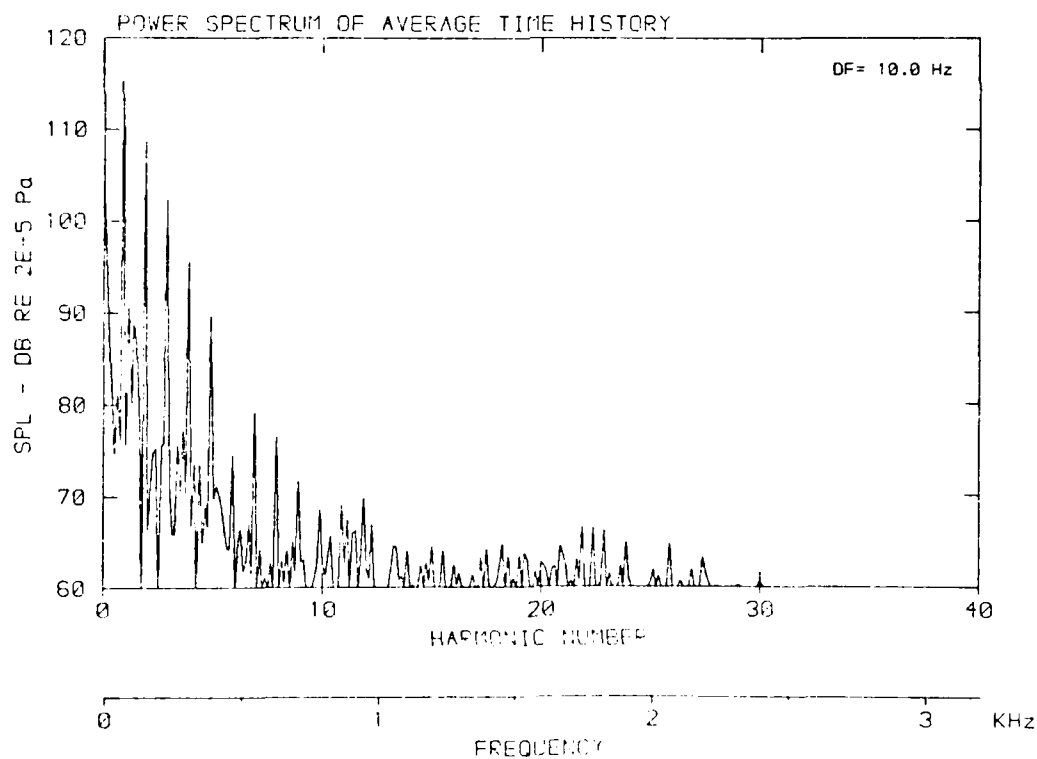
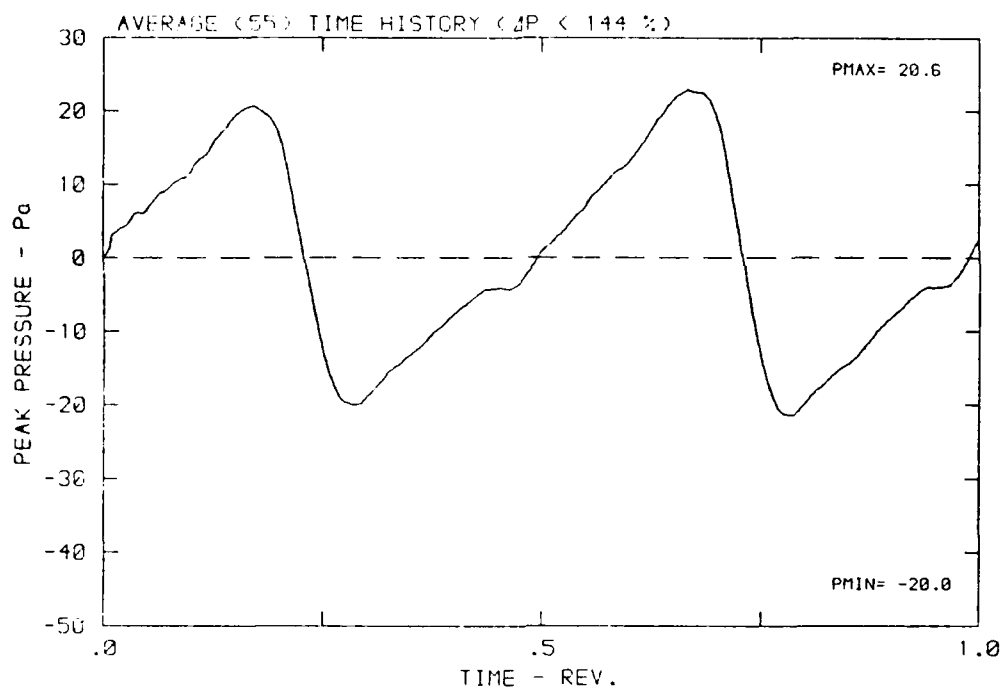
$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 298.7 K





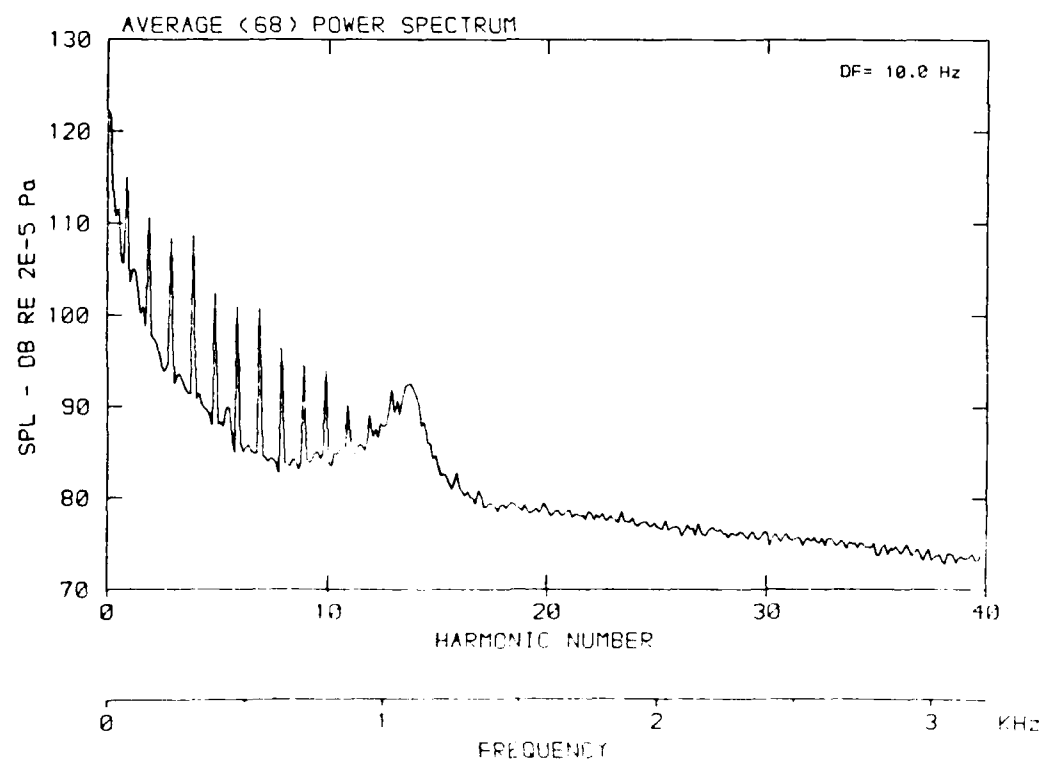
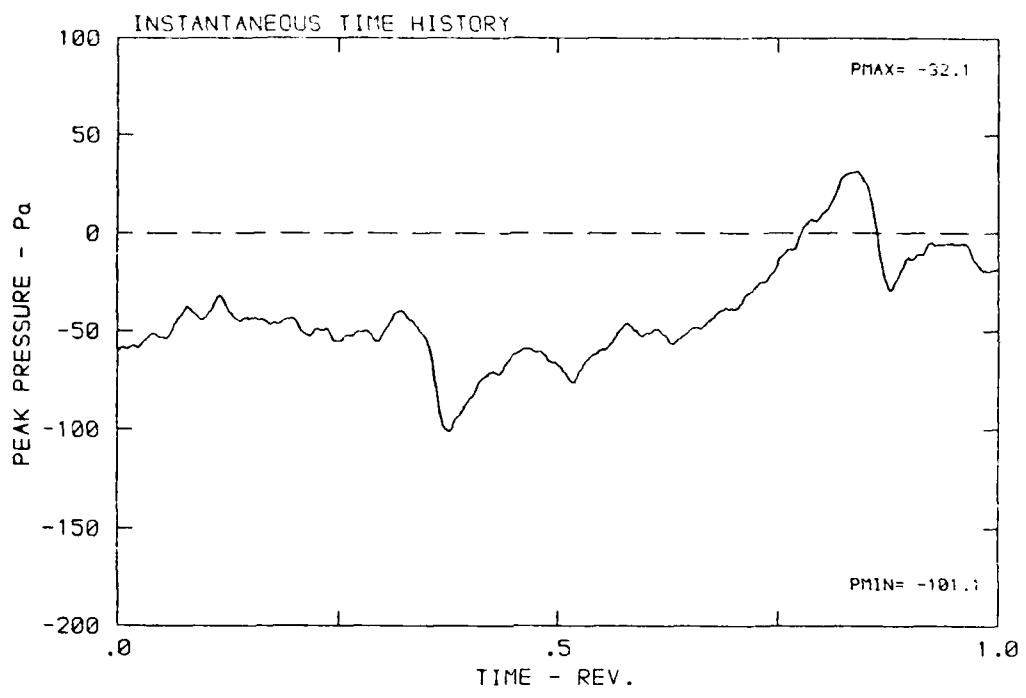
DATA POINT: FNC-12 RUN: 184 MP: 7

$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 288.7 K



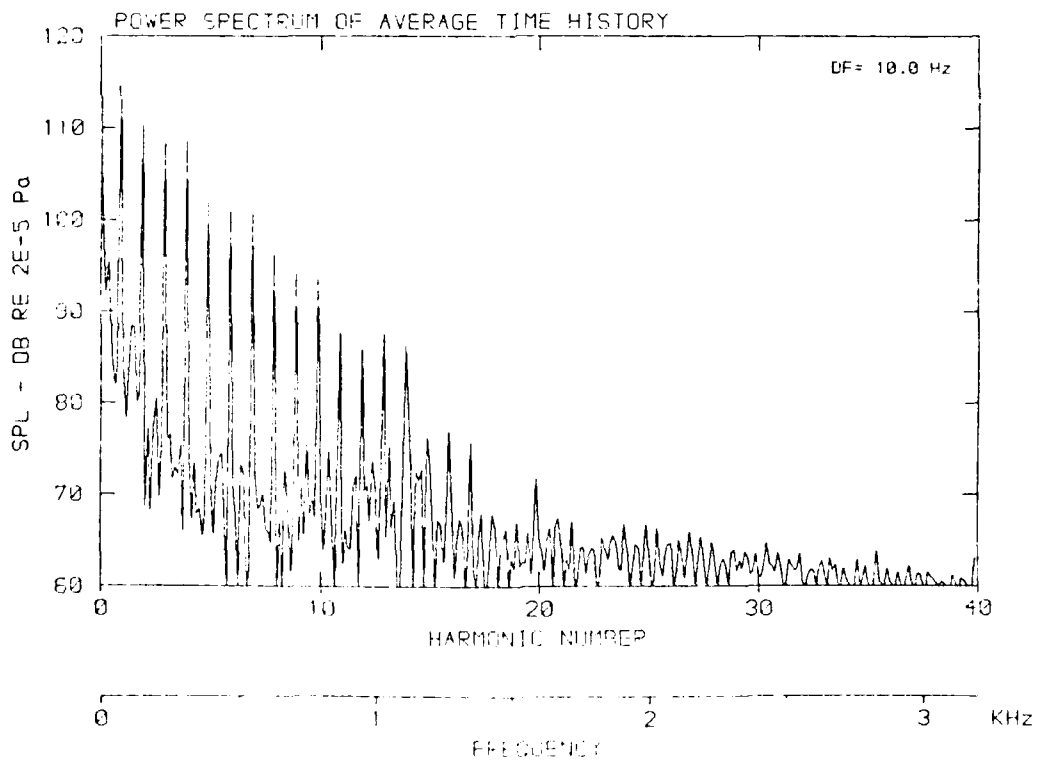
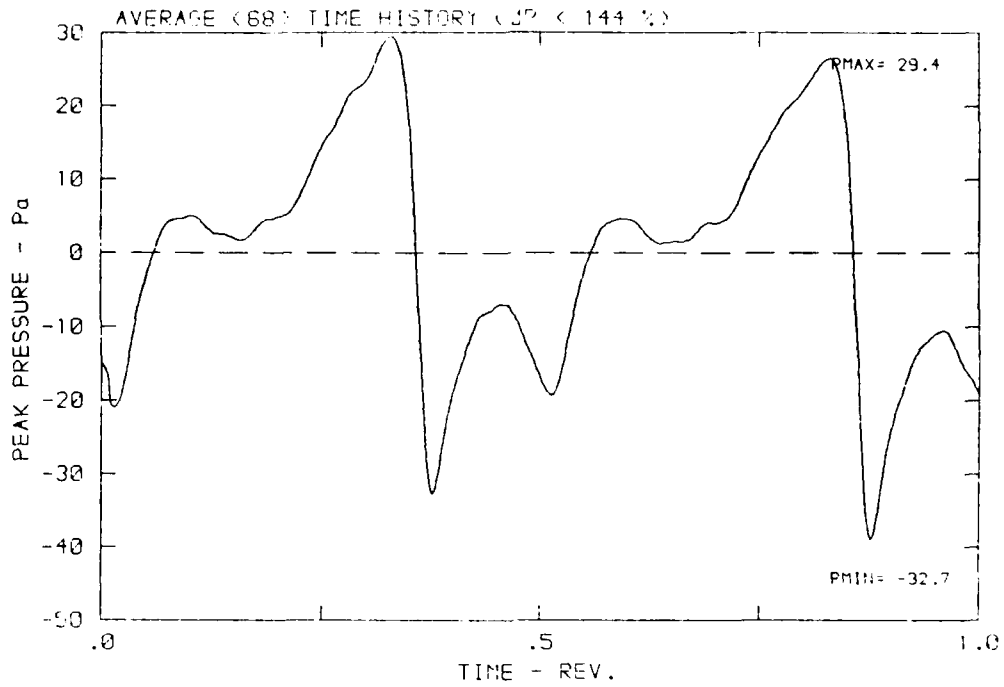
DATA POINT: FNC-12 RUN: 184 MP: 9

$\beta$ : 23.7° MH: .7751 n: 2400 rpm  $v/u$ : .263  $\phi$ : .0° T: 238.7 K



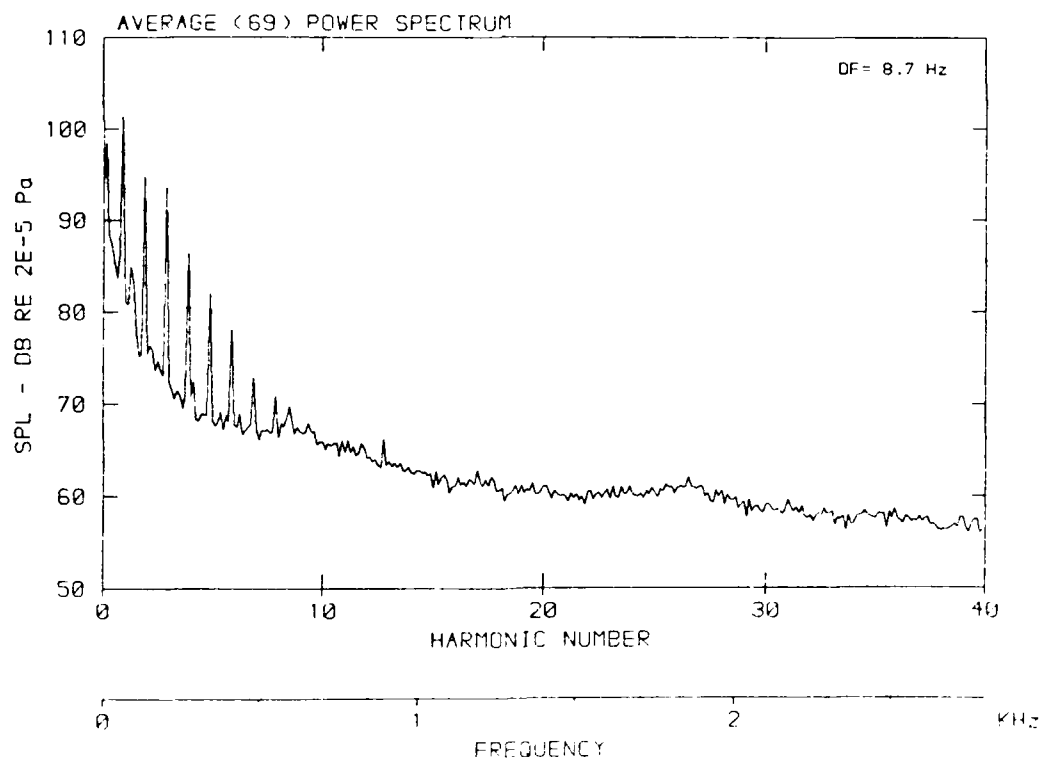
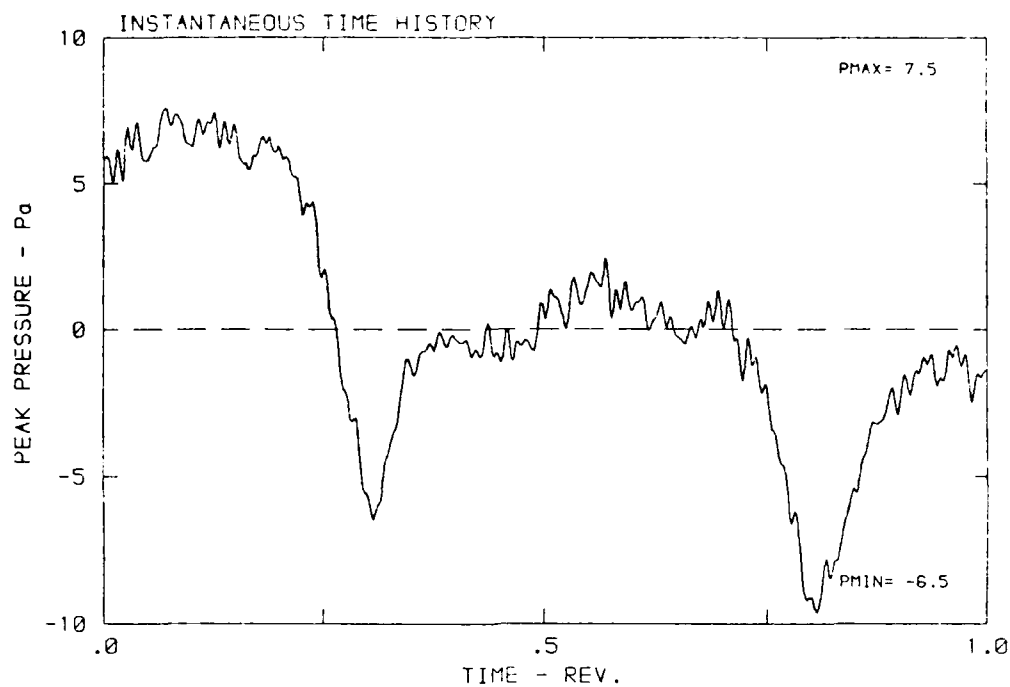
DATA POINT: FND-1 RUN: 184 IP: 9

$\beta$ : 23.7° MH: .7751 n: 2400 rpm v: .263  $\phi$ : .0° T: 288.7 K



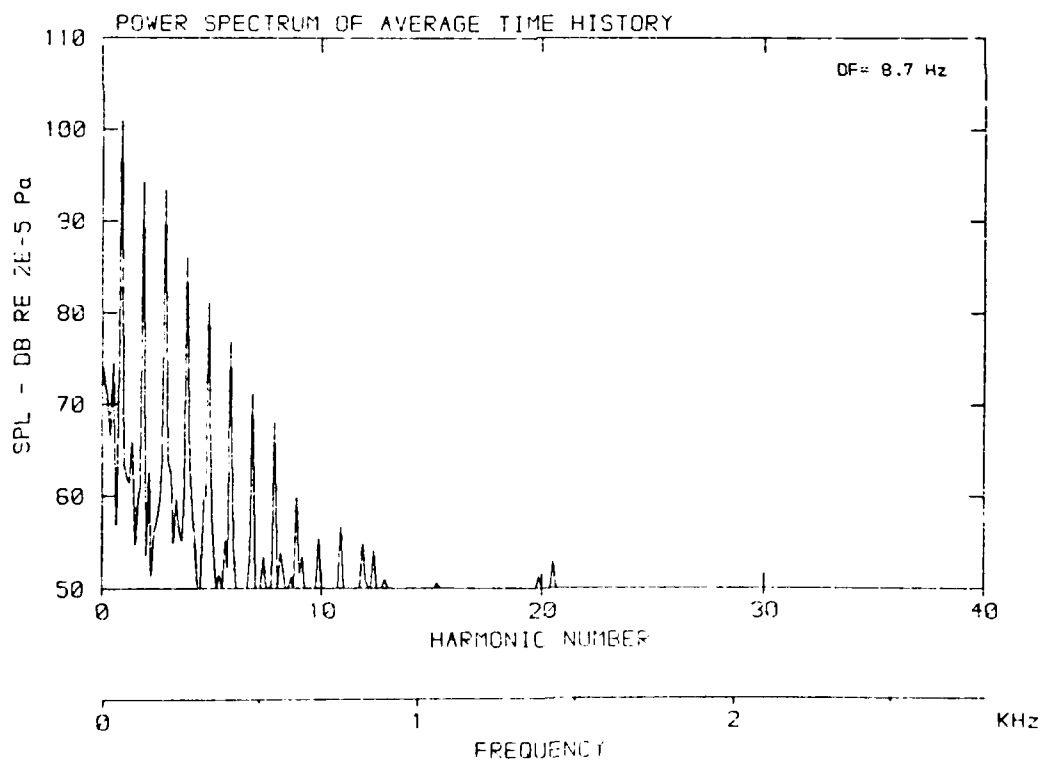
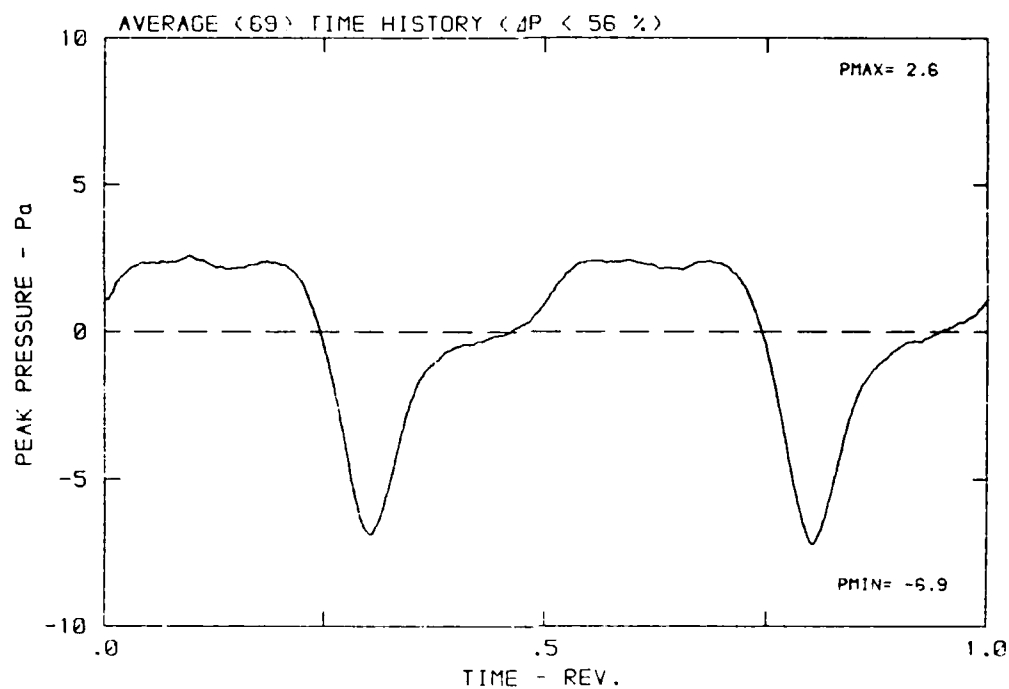
DATA POINT: FNC-1 RUN: 176 MP: 1

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



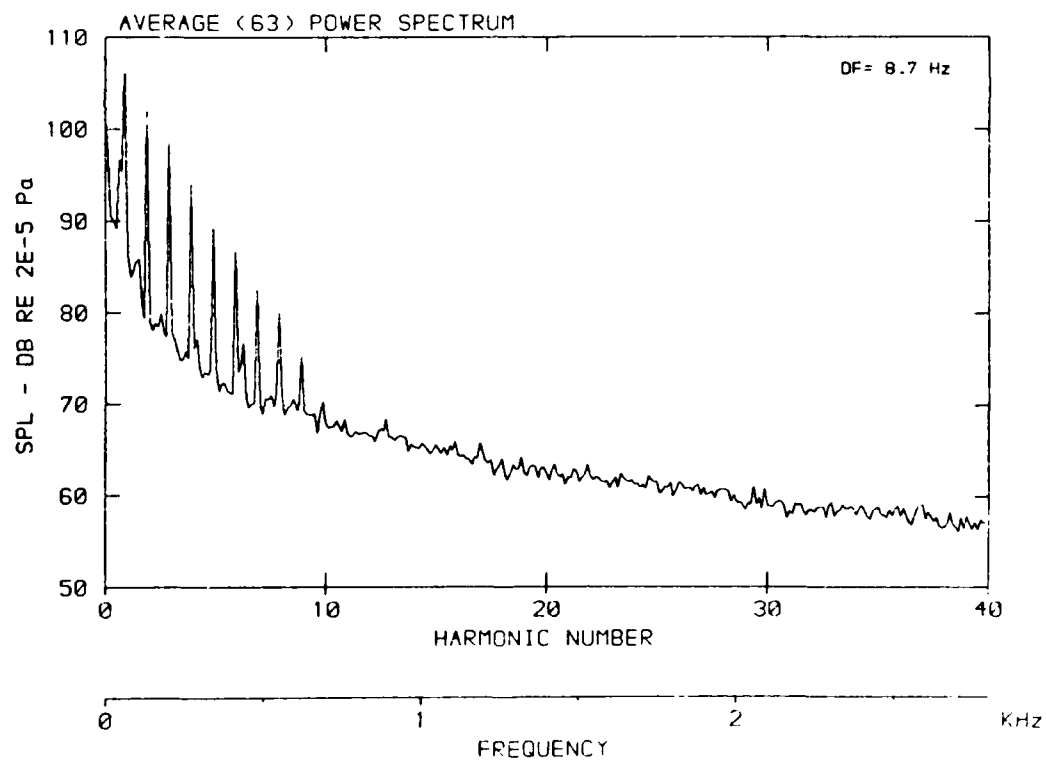
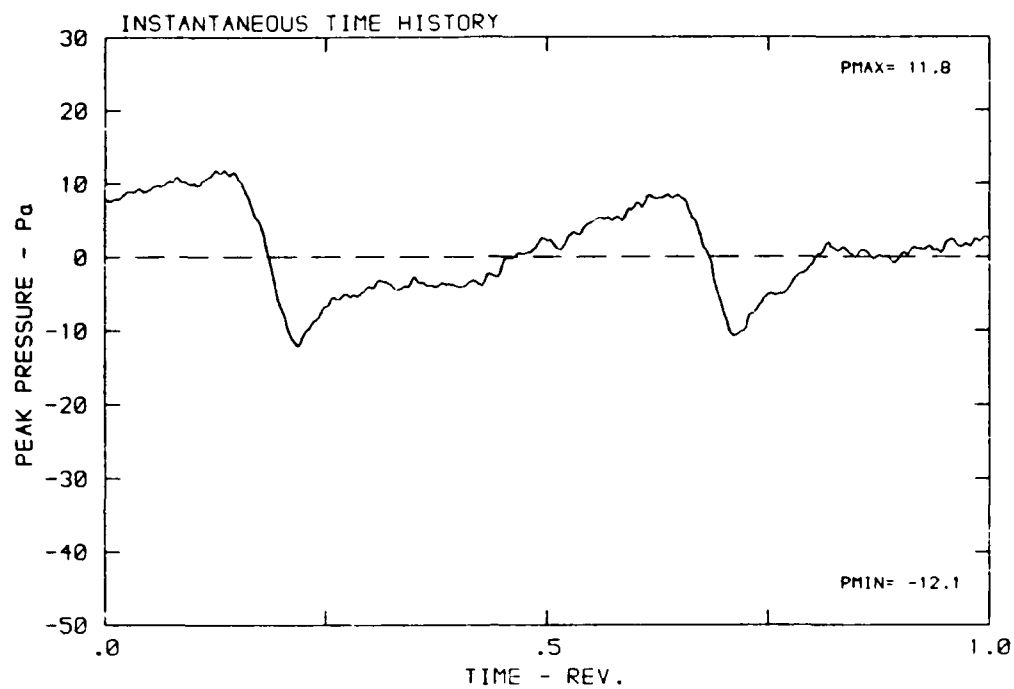
DATA POINT: FNC-1 RUN: 176 MP: 1

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



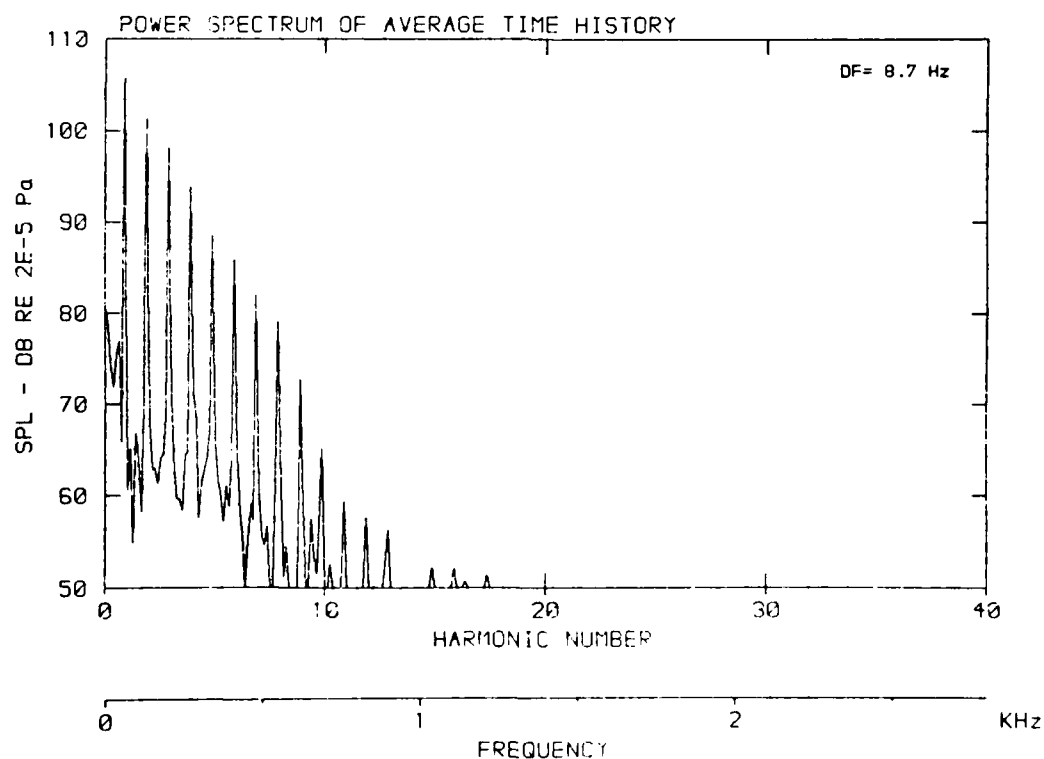
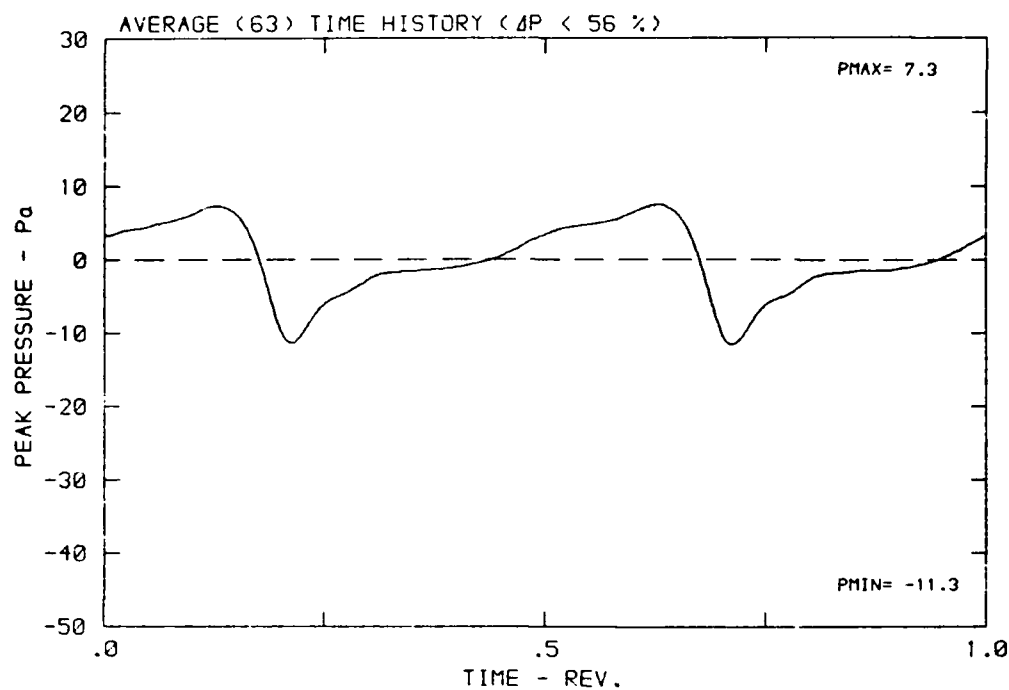
DATA POINT: FNC-1 RUN: 176 MP: 2

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



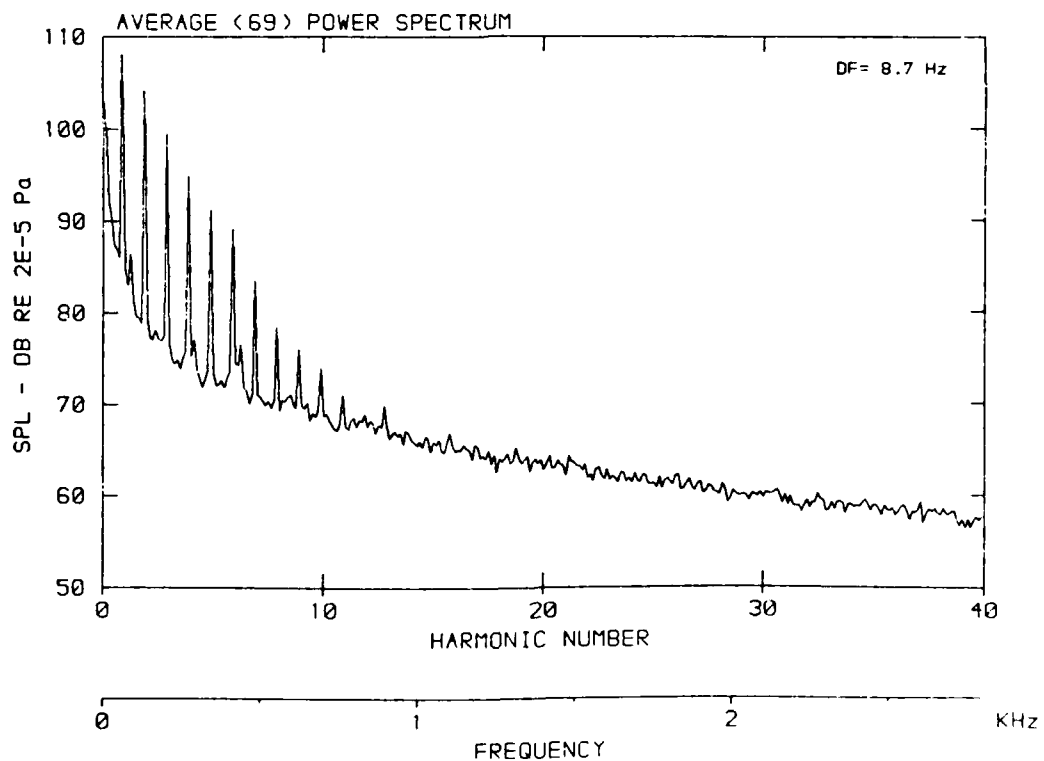
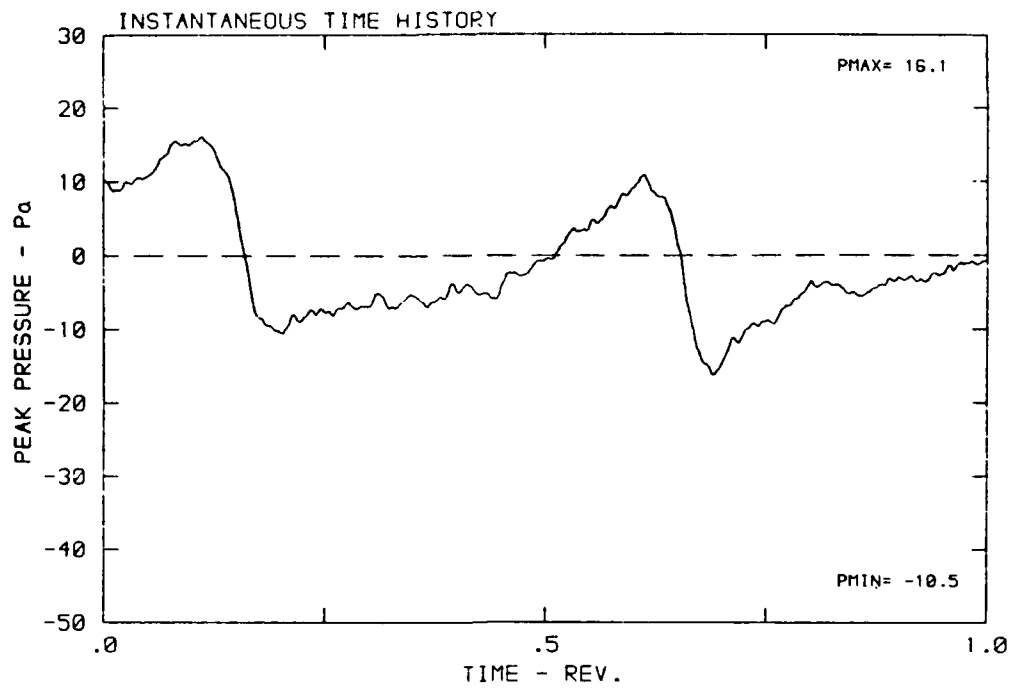
DATA POINT: FNC-1 RUN: 176 MP: 2

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



DATA POINT: FNC-1 RUN: 176 MP: 3

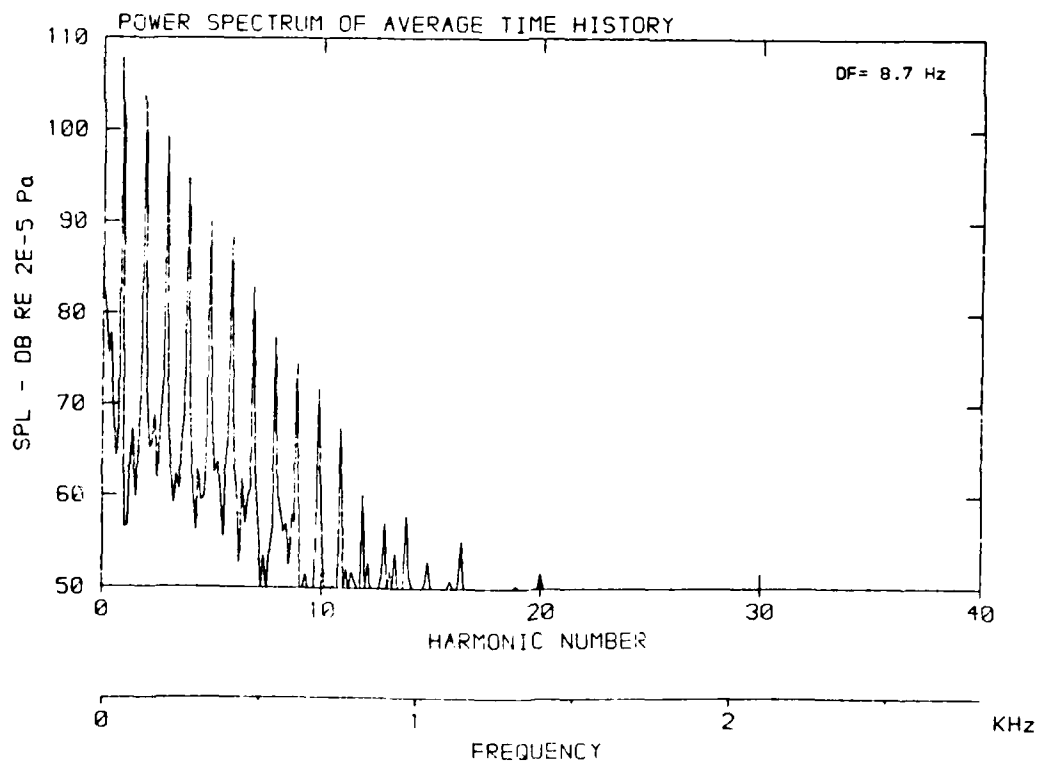
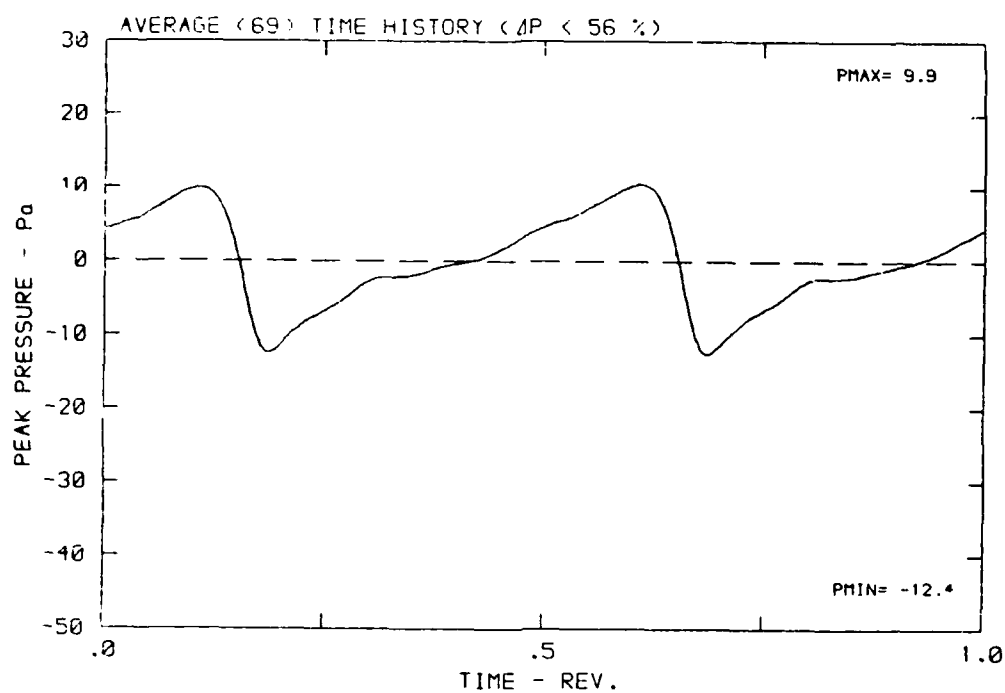
$\beta$ : 19.9° MH: .6751 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 267.0 K





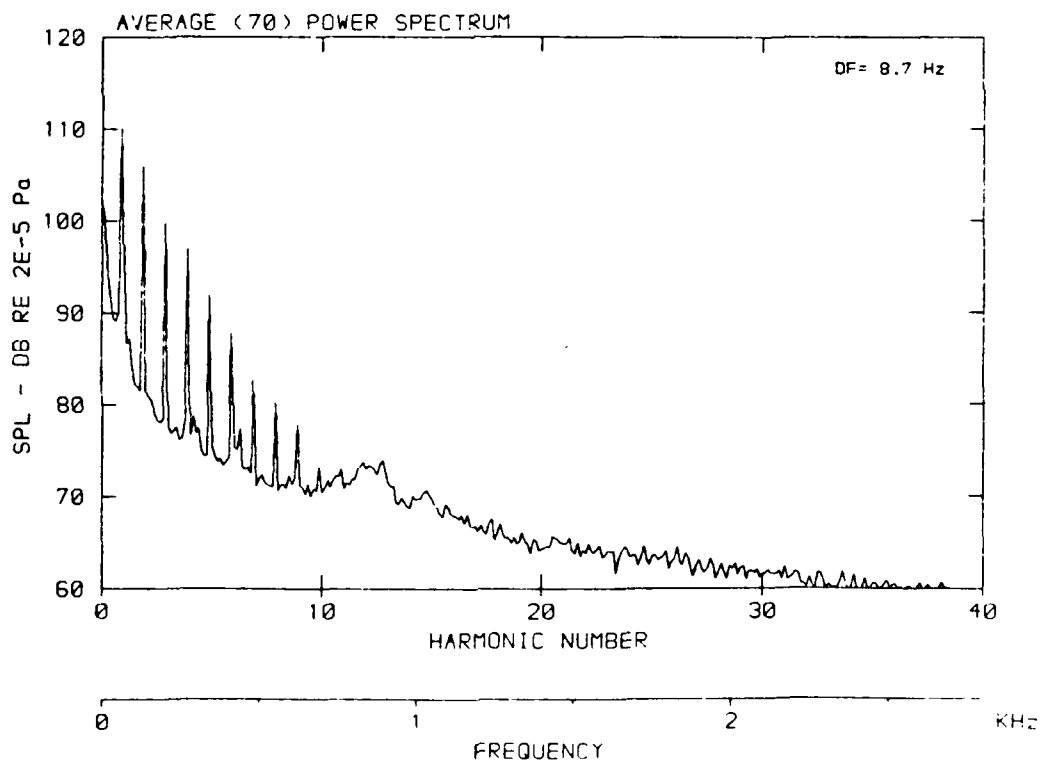
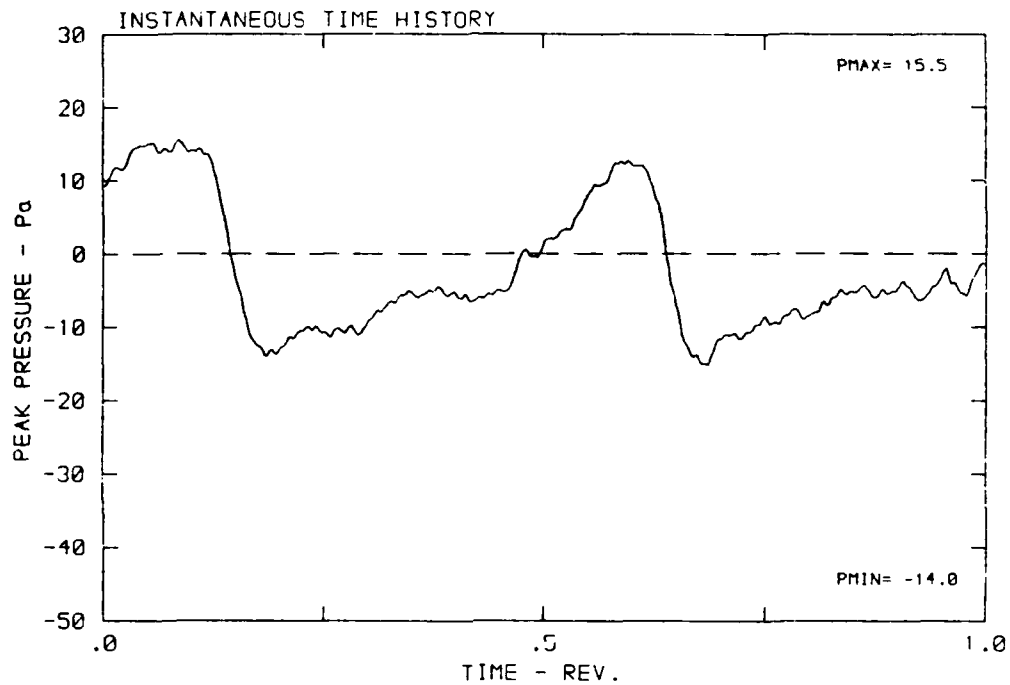
DATA POINT: FNC-1 RUN: 176 MP: 3

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



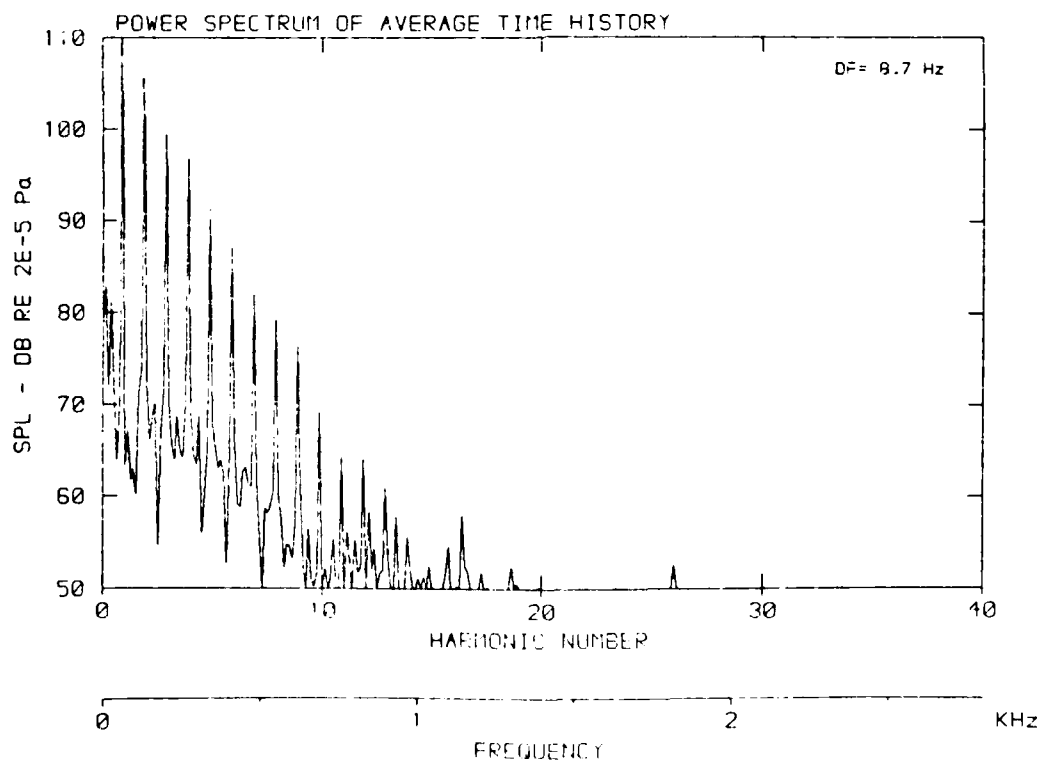
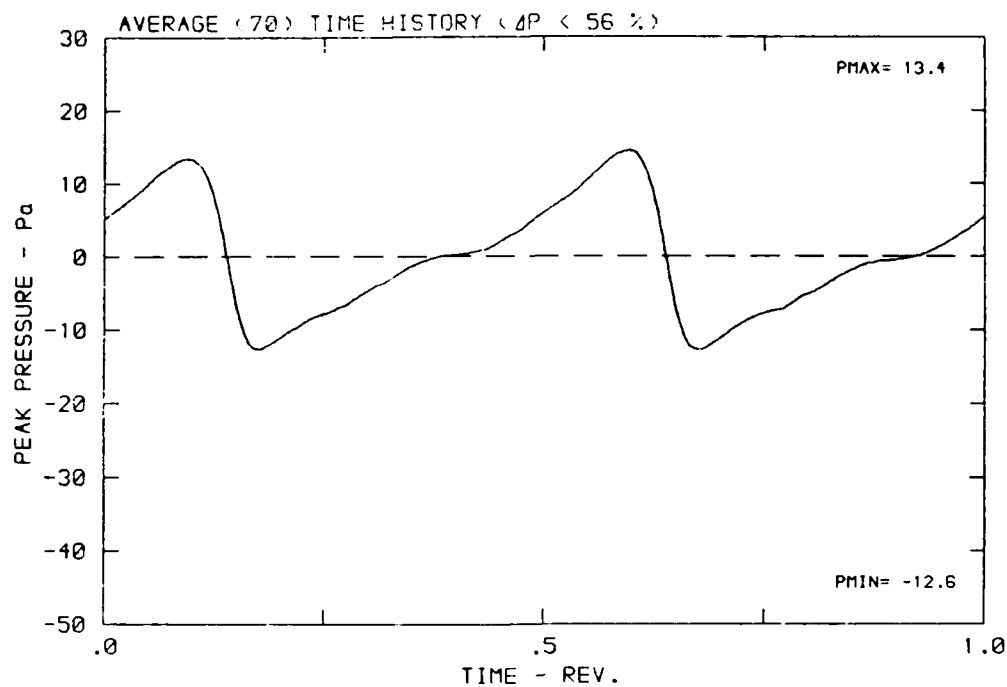
DATA POINT: FNC-1 RUN: 176 MP: 4

$\beta$ : 19.9° MH: .6751 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.0 K



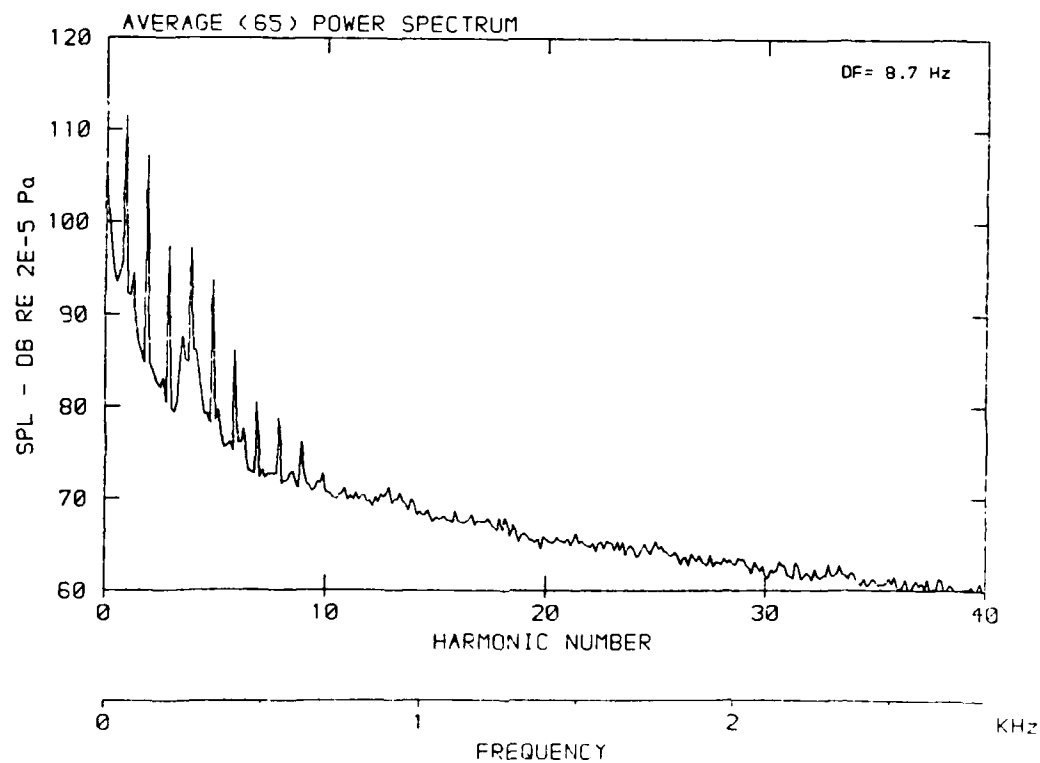
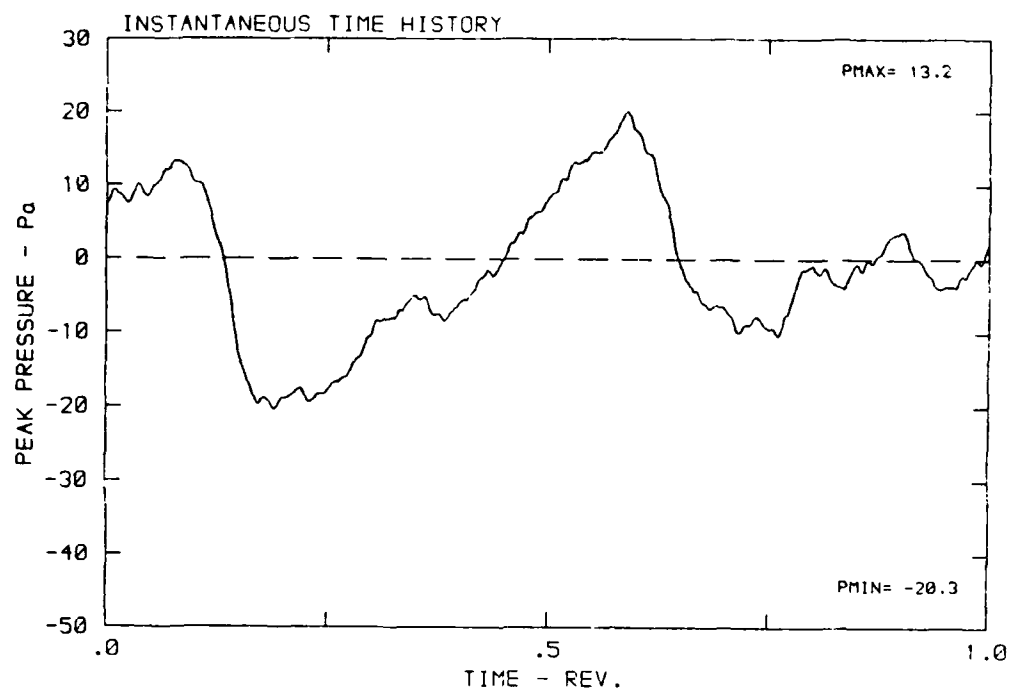
DATA POINT: FNC-1 RUN: 176 MP: 4

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



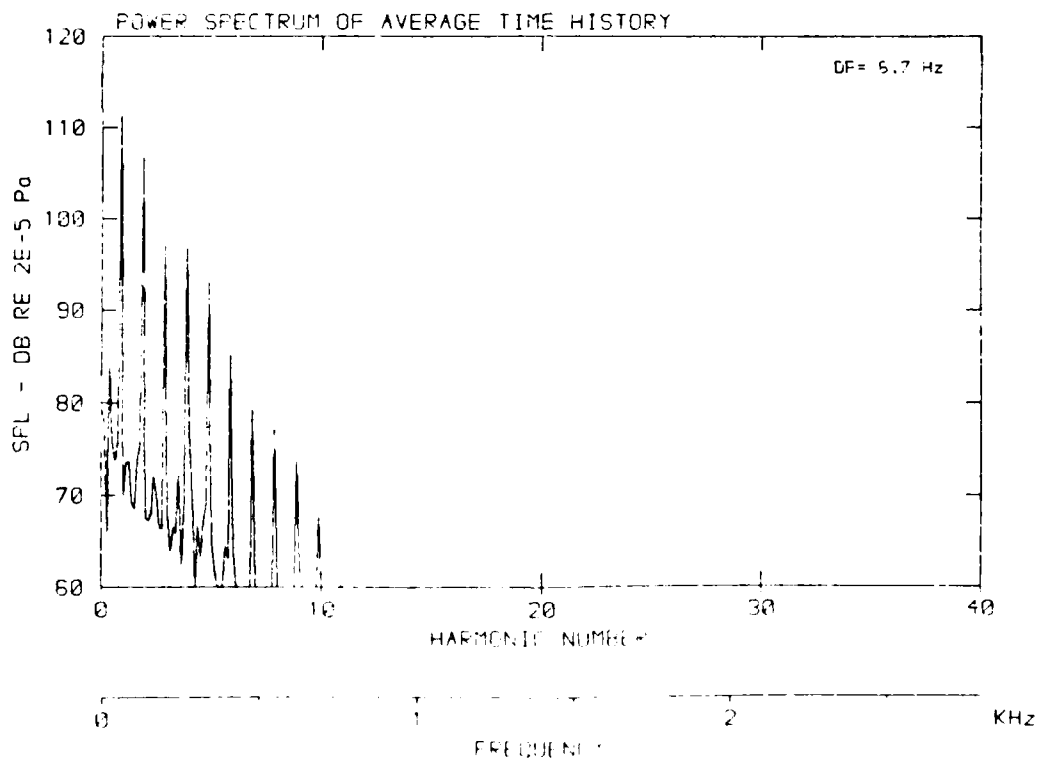
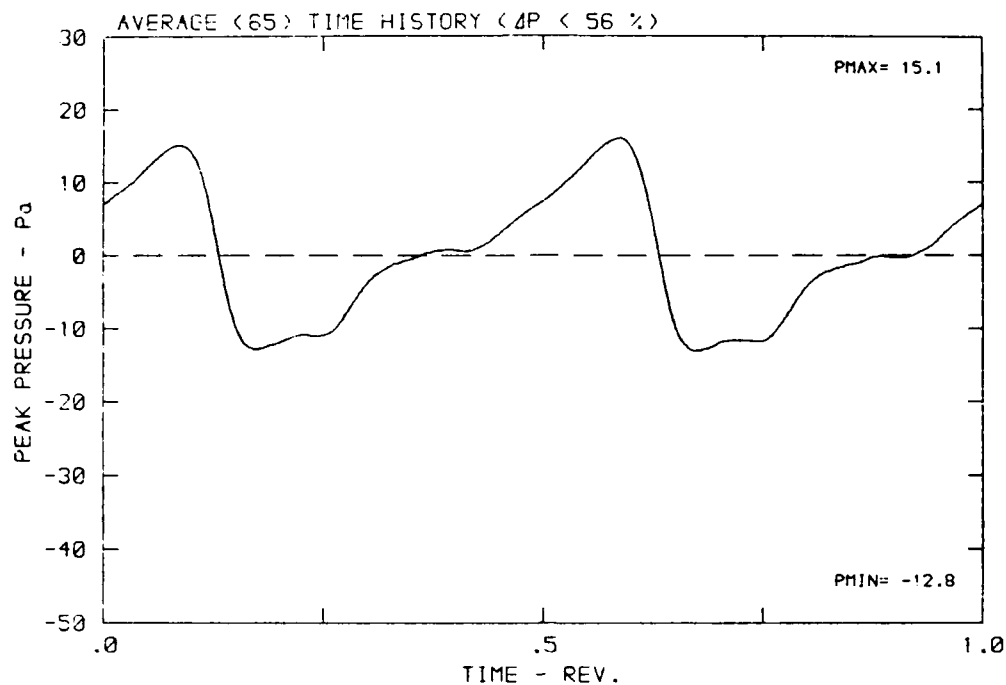
DATA POINT: FNC-1 RUN: 176 MP: 5

$\beta$ : 19.9° MH: .6751 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.0 K



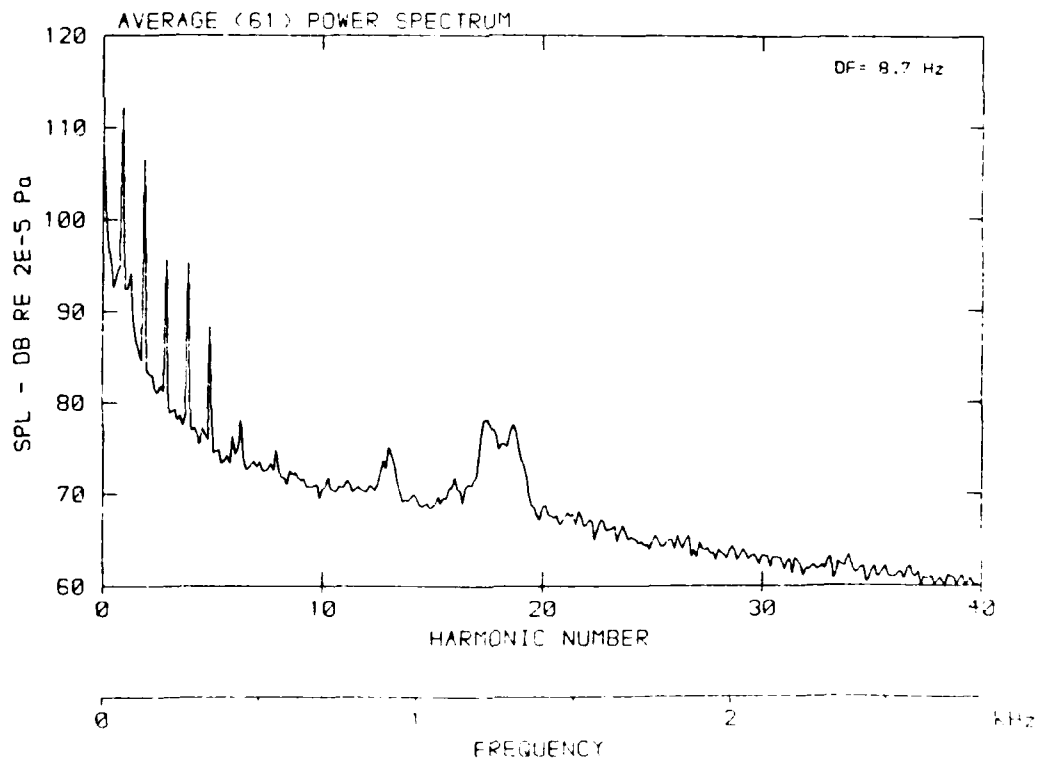
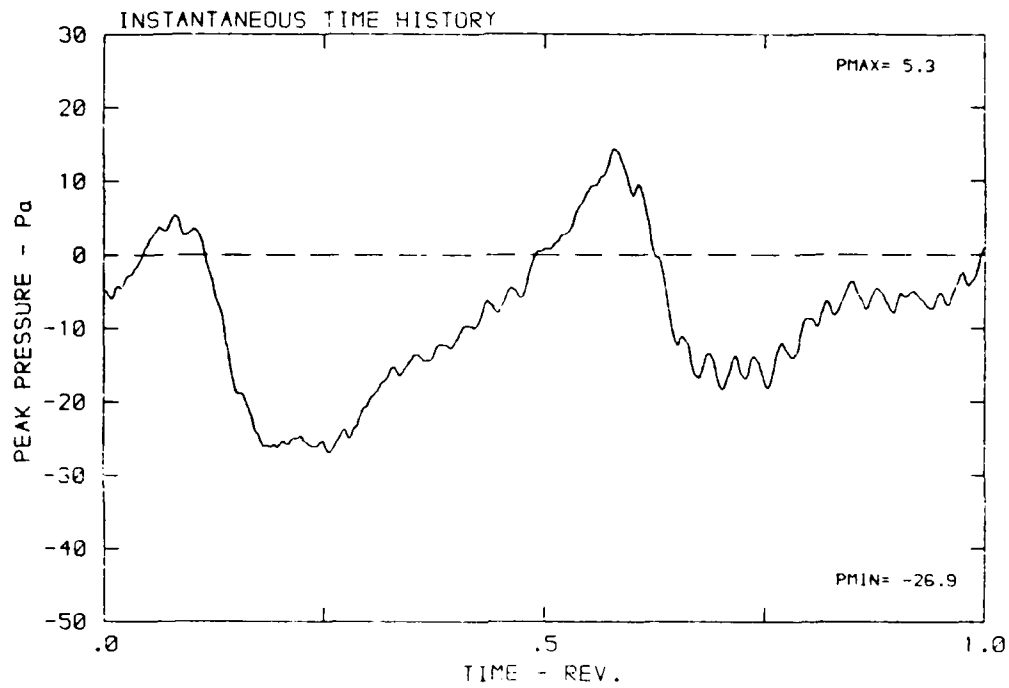
DATA POINT: FNC-1 RUN: 176 MP: 5

$\beta$ : 19.9° MH: .6751 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.0 K



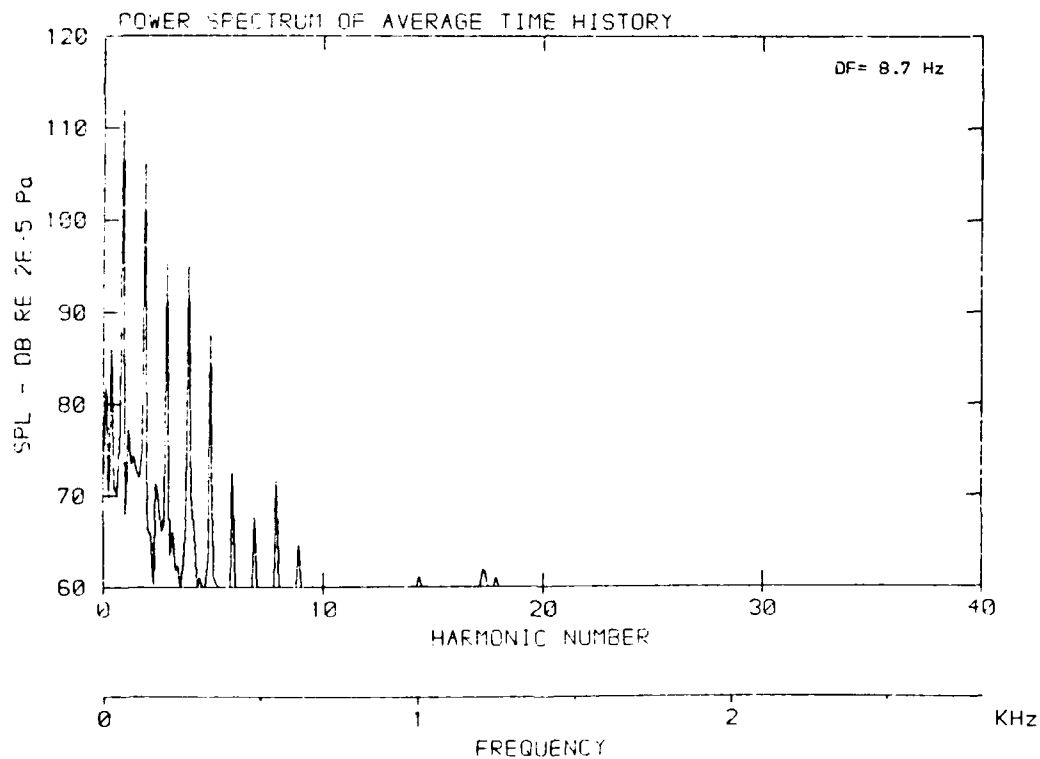
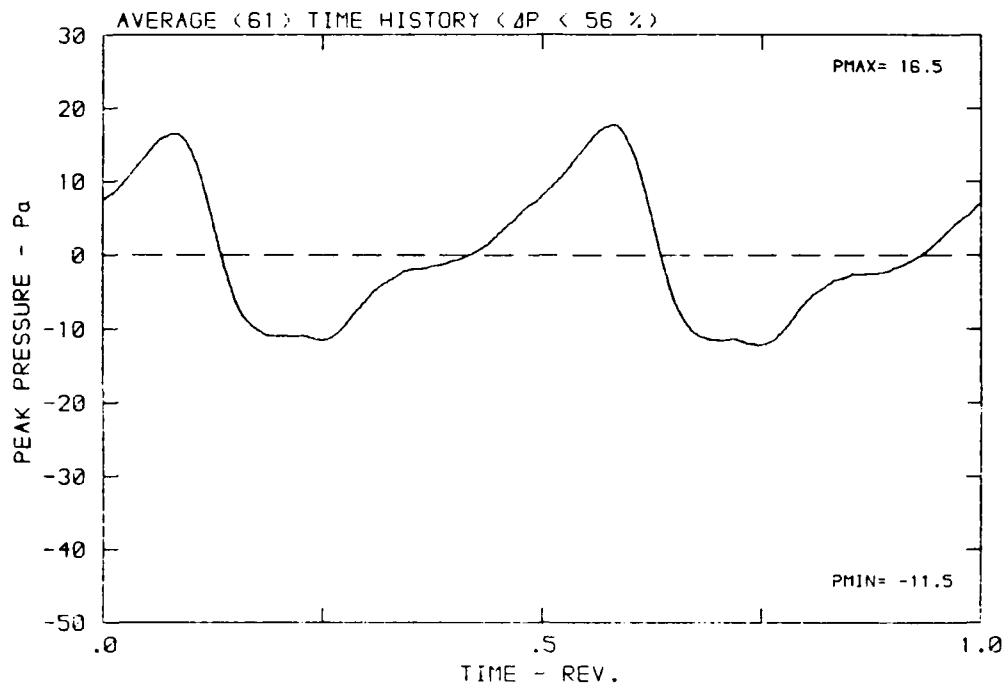
DATA POINT: FNC-1 RUN: 176 MP: 5

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



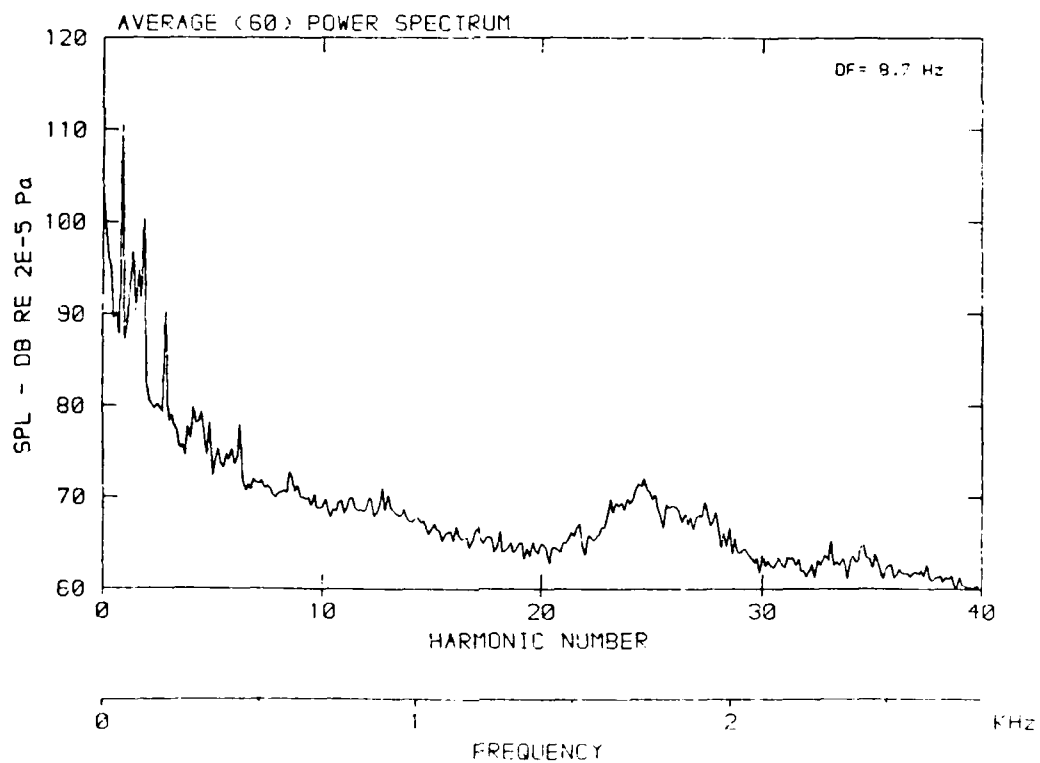
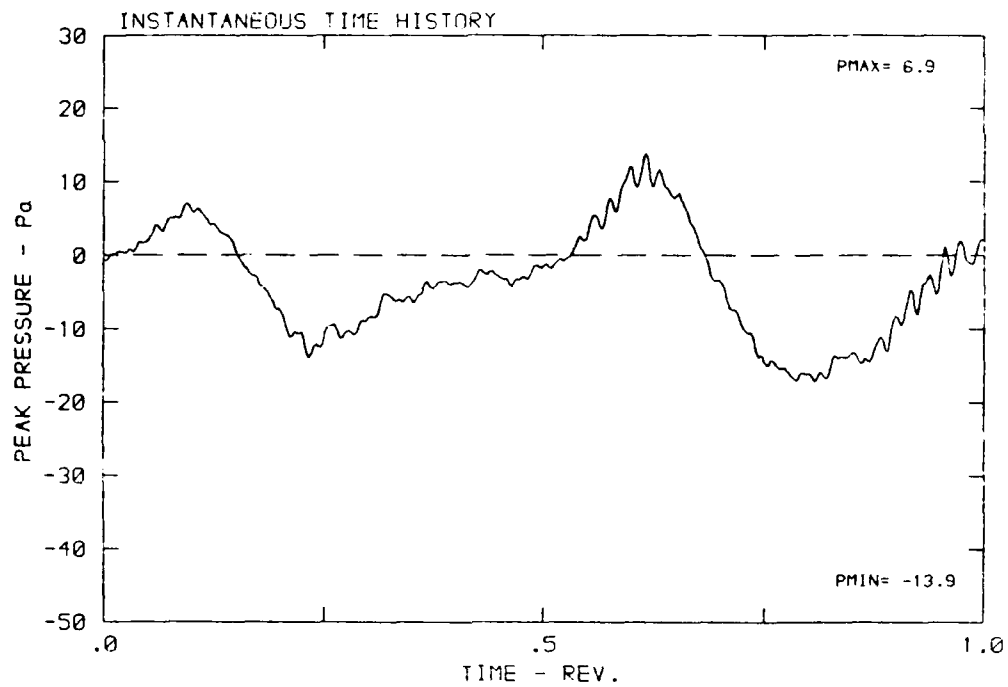
DATA POINT: FNC-1 RUN: 176 MP: 6

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



DATA POINT: FNC-1 PUN: 176 MF: 7

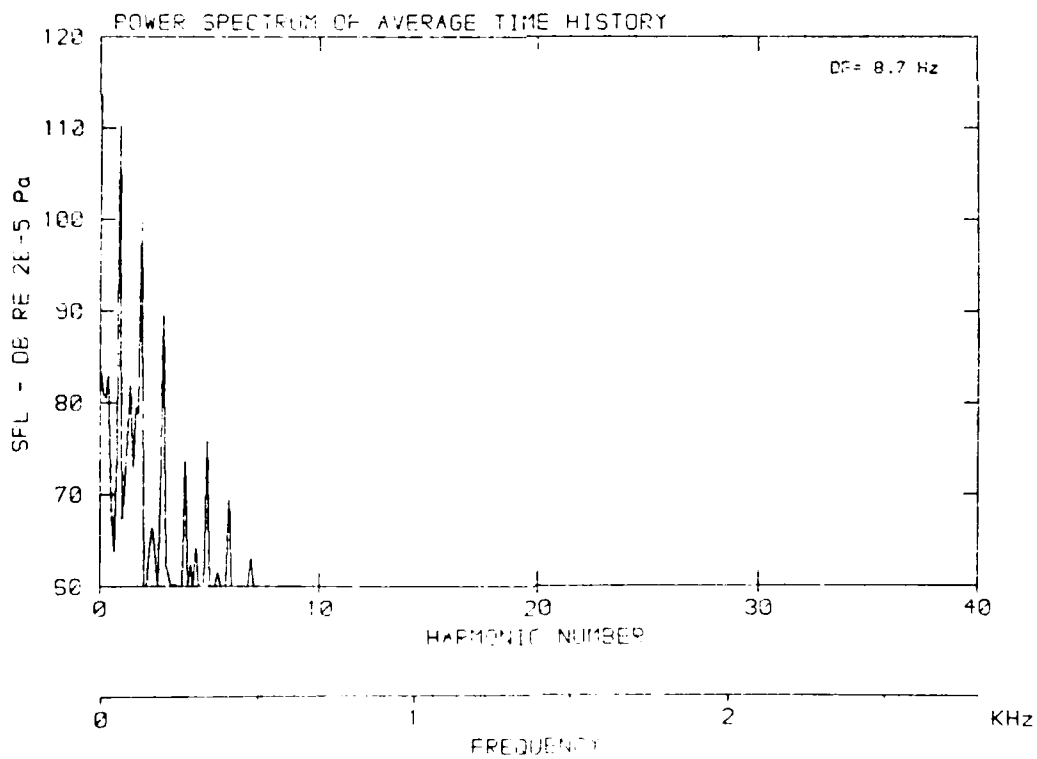
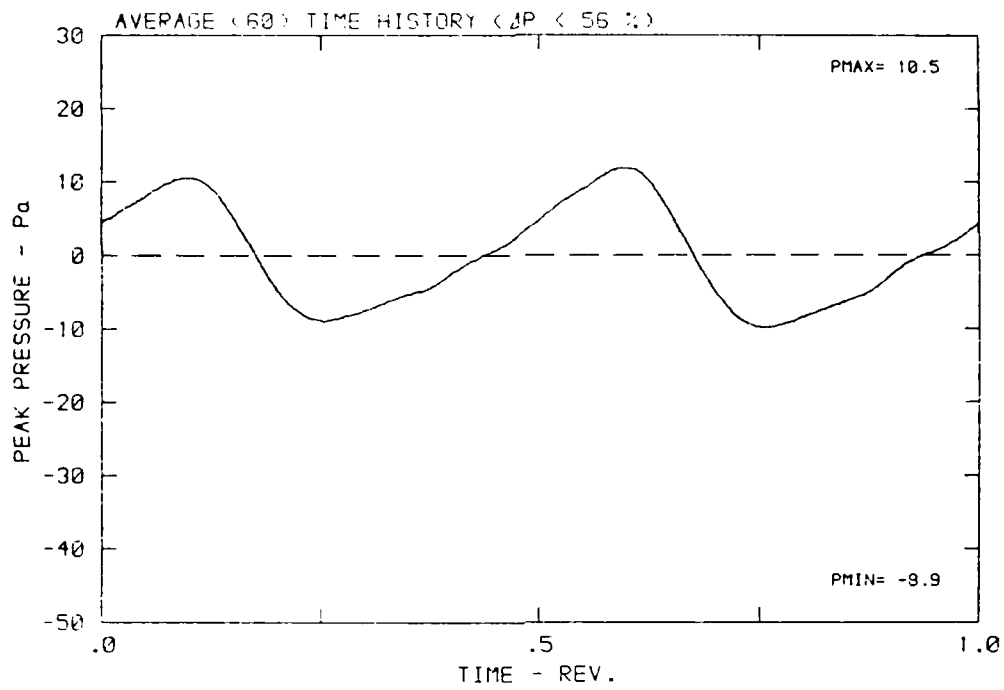
$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K





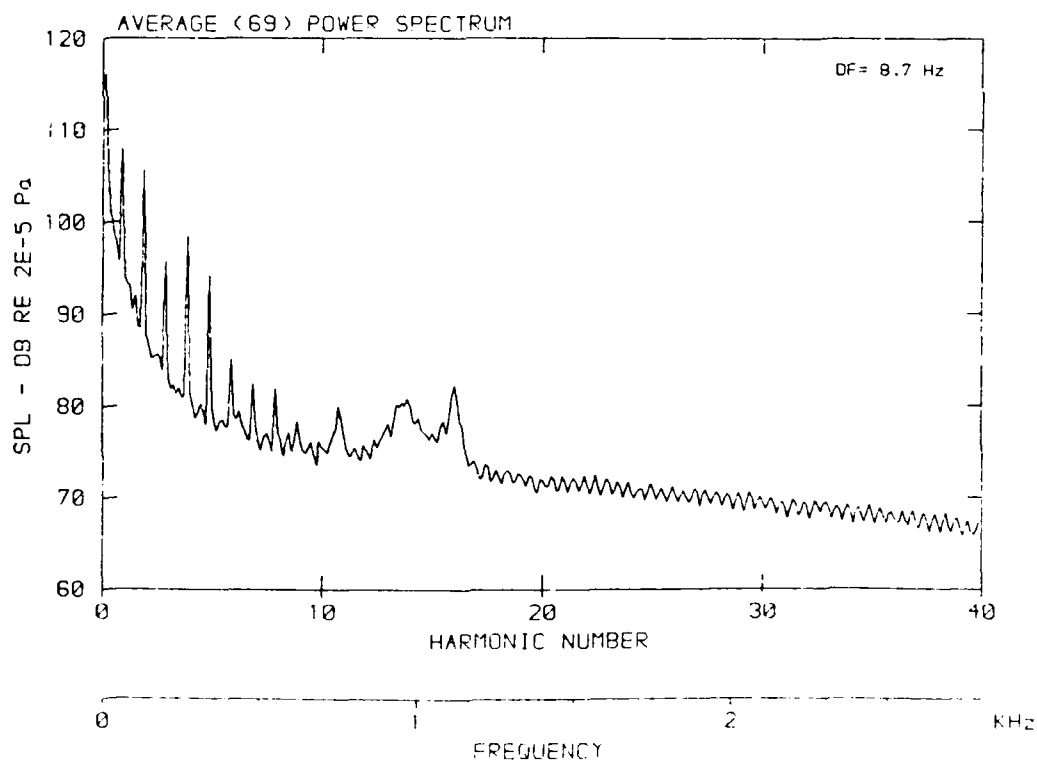
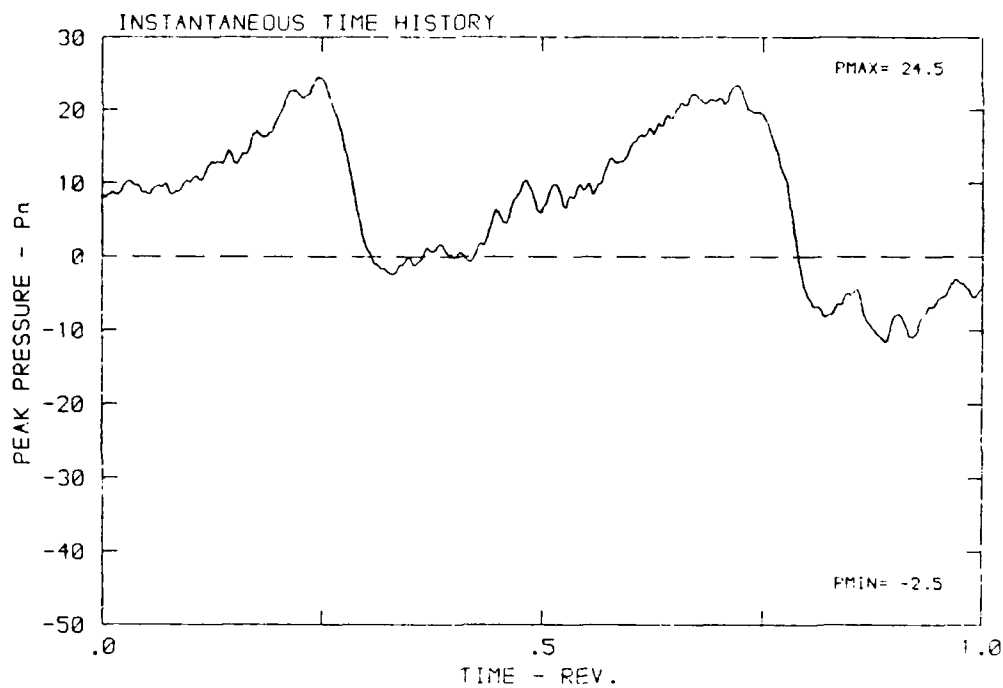
DATA POINT: FNC-1 RUN: 176 MP: 7

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



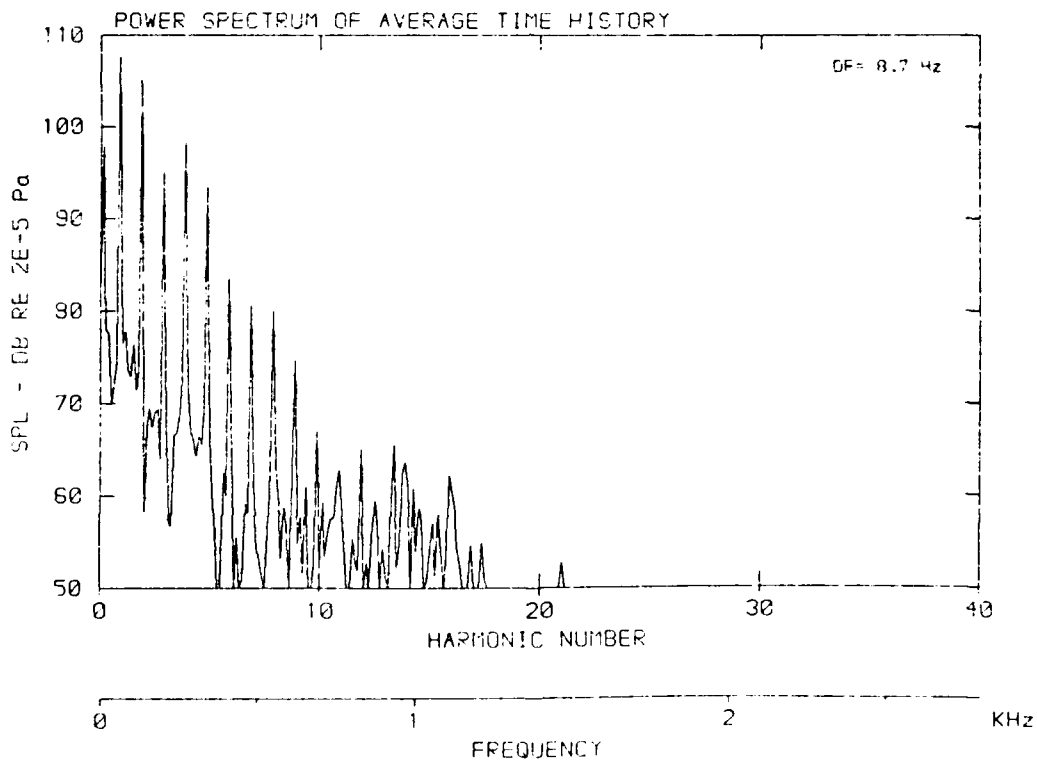
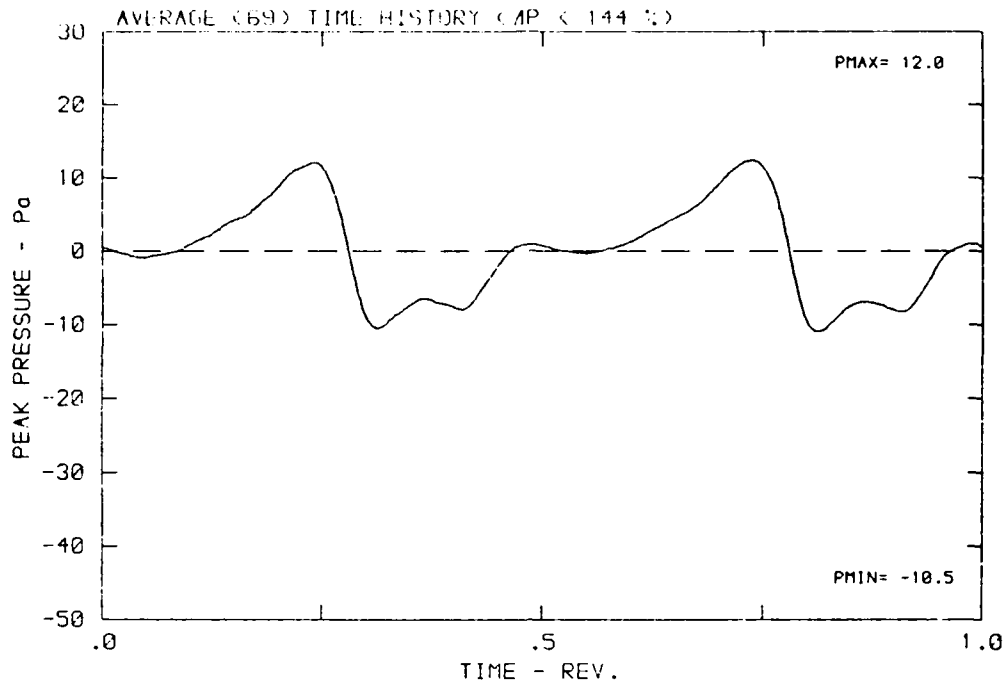
DATA POINT: FNC-1 RUN: 176 MP: 5

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



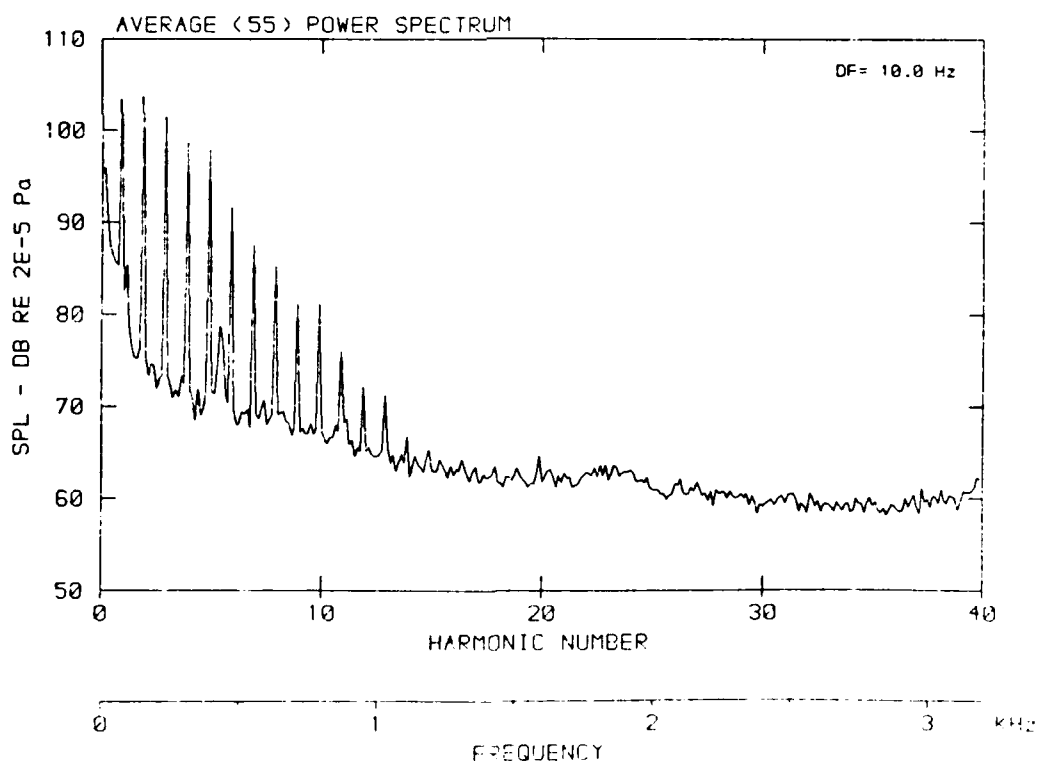
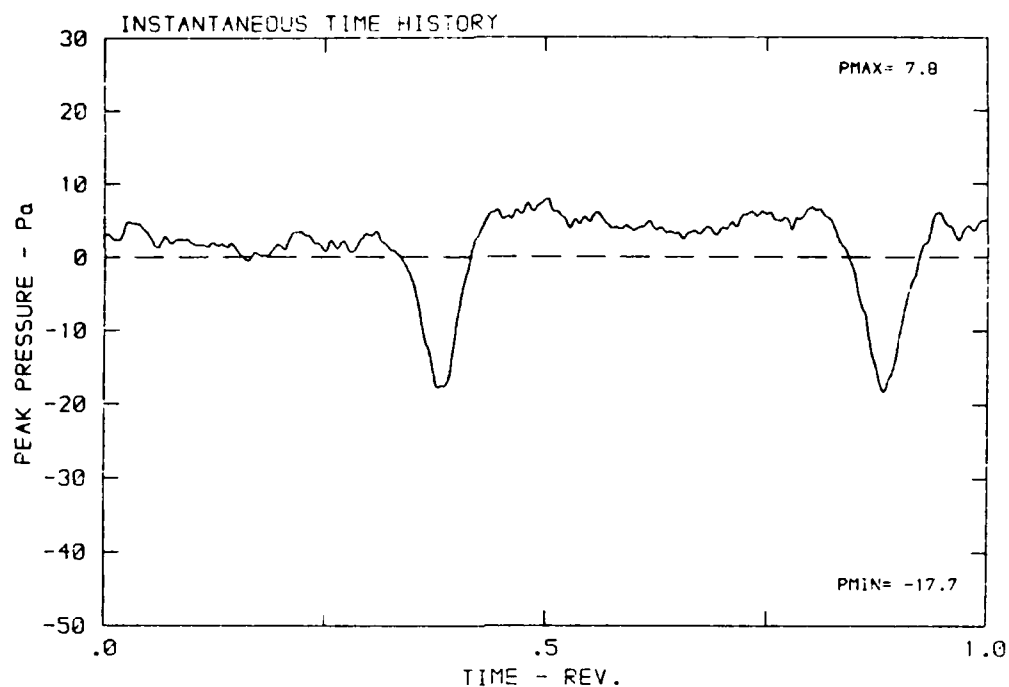
DATA POINT: FNC-1 RUN: 176 MP: 9

$\beta$ : 19.9° MH: .6751 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.0 K



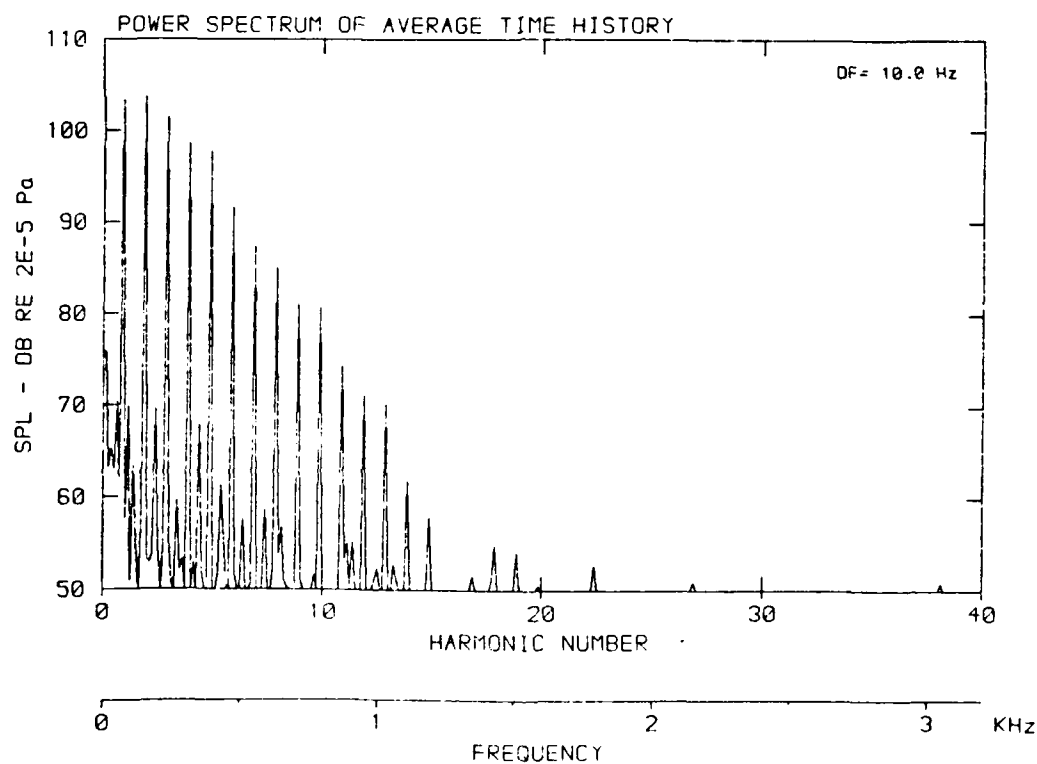
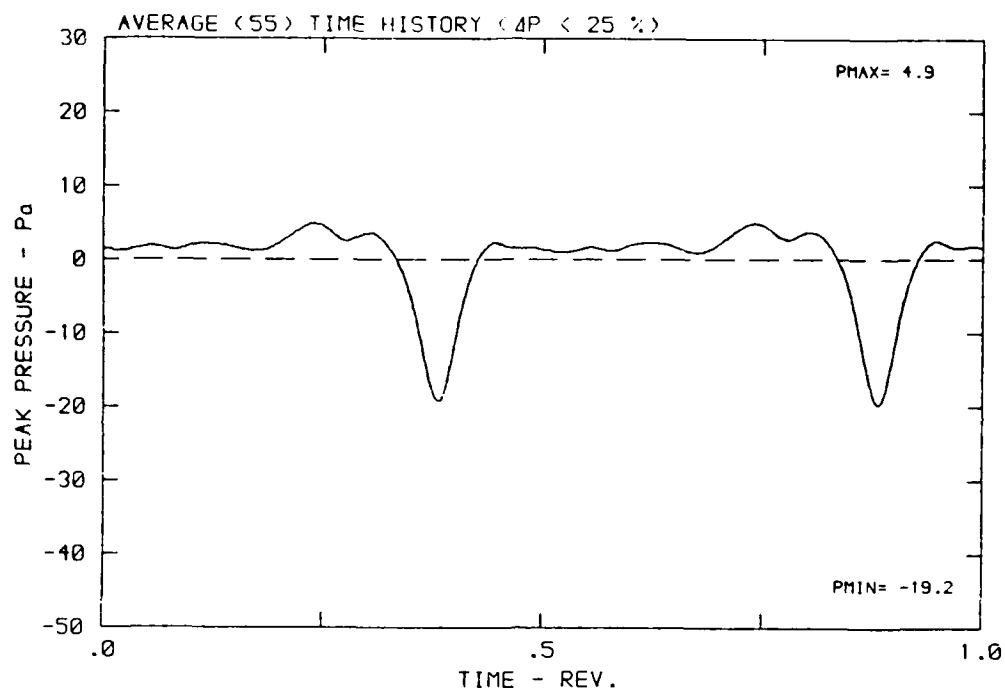
DATA POINT: ENC-2 RUN: 177 MP: 1

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $v/u$ : .202  $\phi$ : 3.6° T: 287.7 K



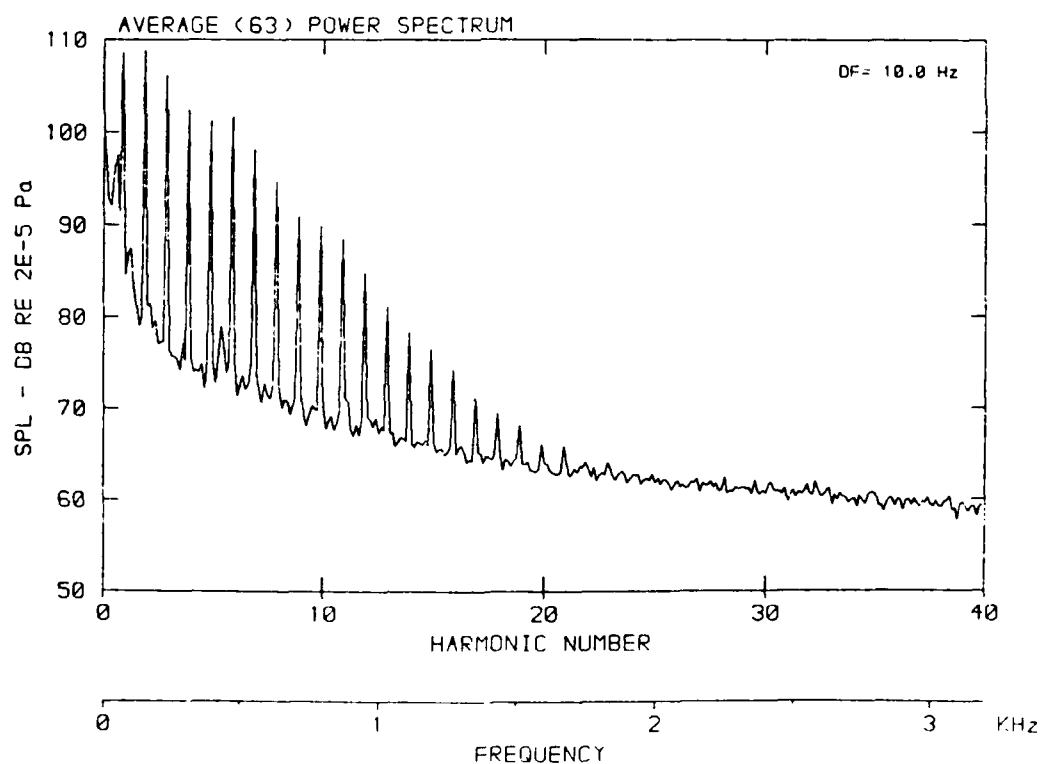
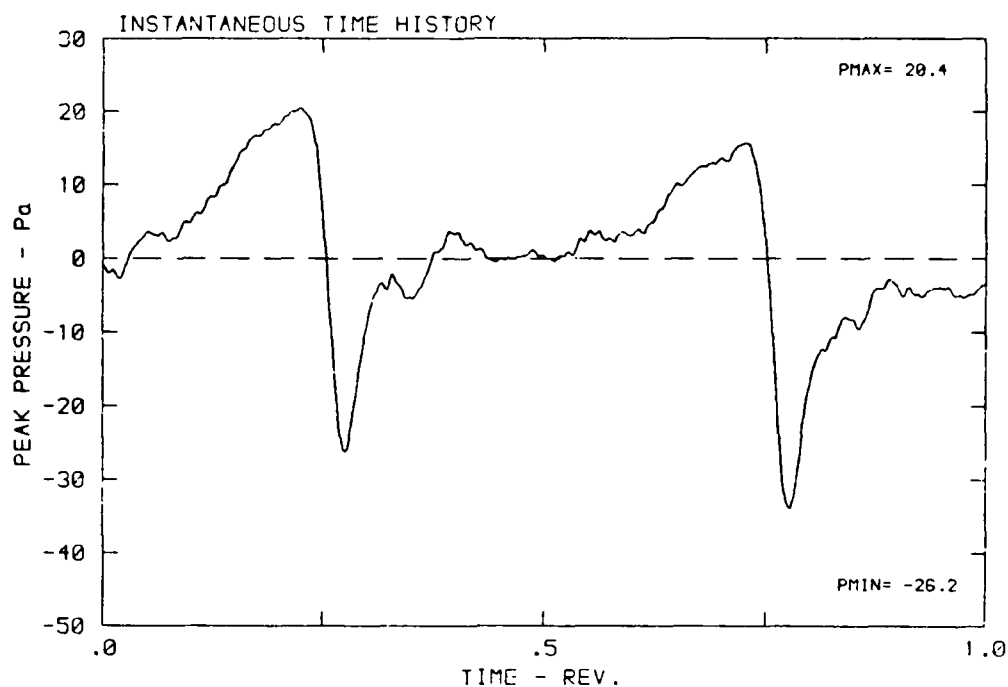
DATA POINT: FNC-2 RUN: 177 MP: 1

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $v/u$ : .202  $\phi$ : 3.6° T: 287.7 K



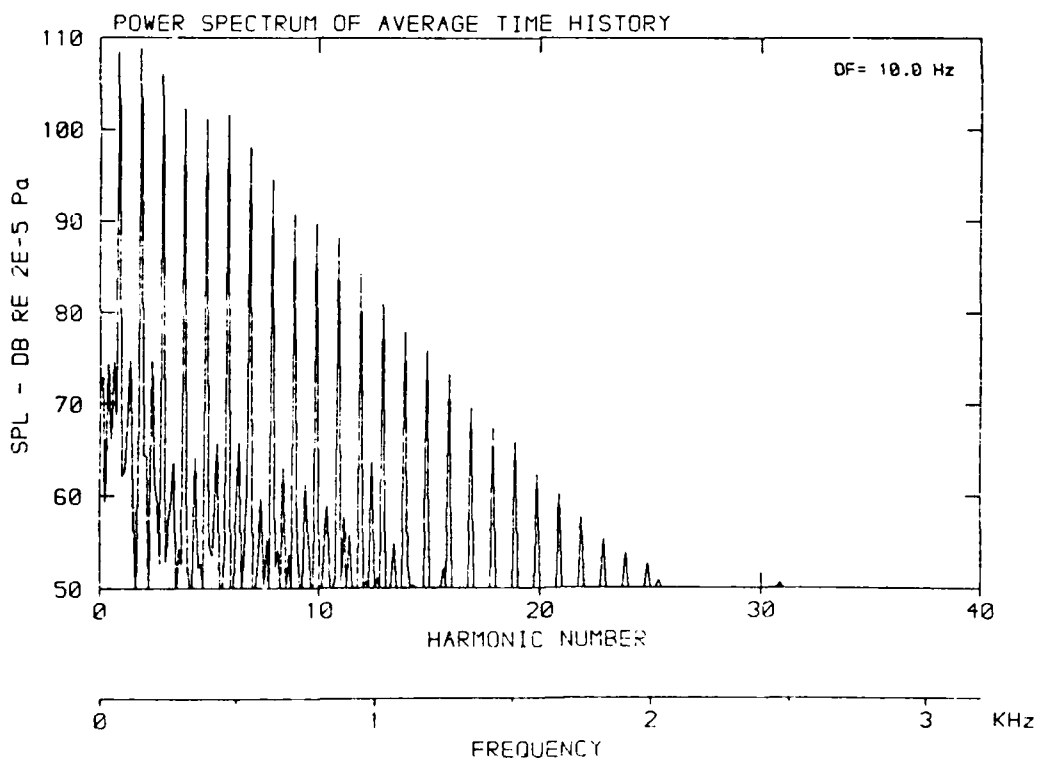
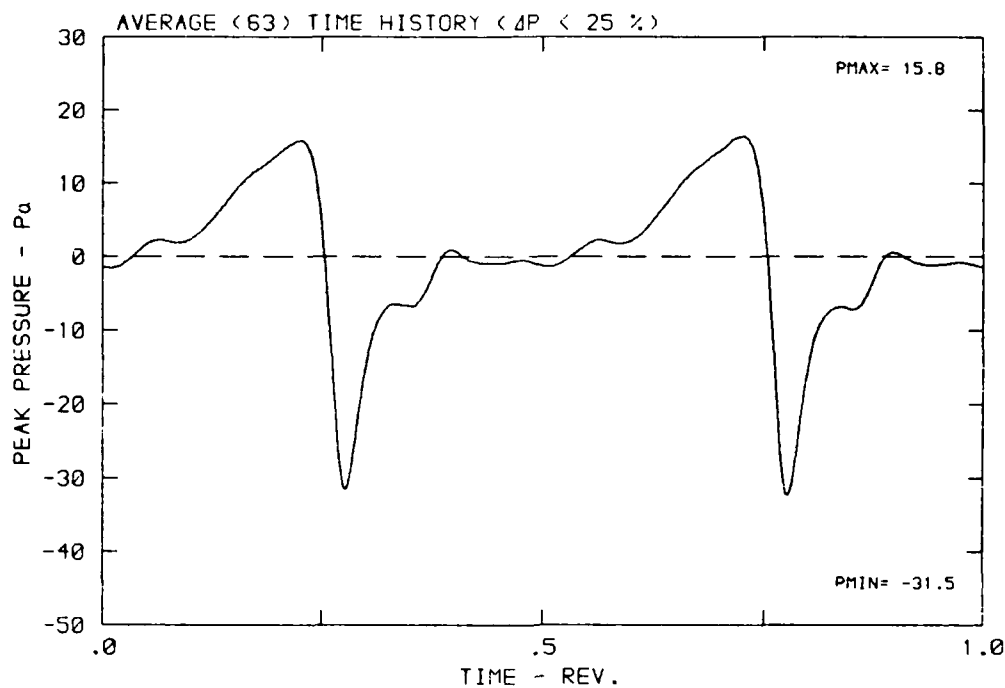
DATA POINT: FNC-2 RUN: 177 MP: 2

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $v/u$ : .202  $\phi$ : 3.6° T: 287.7 K



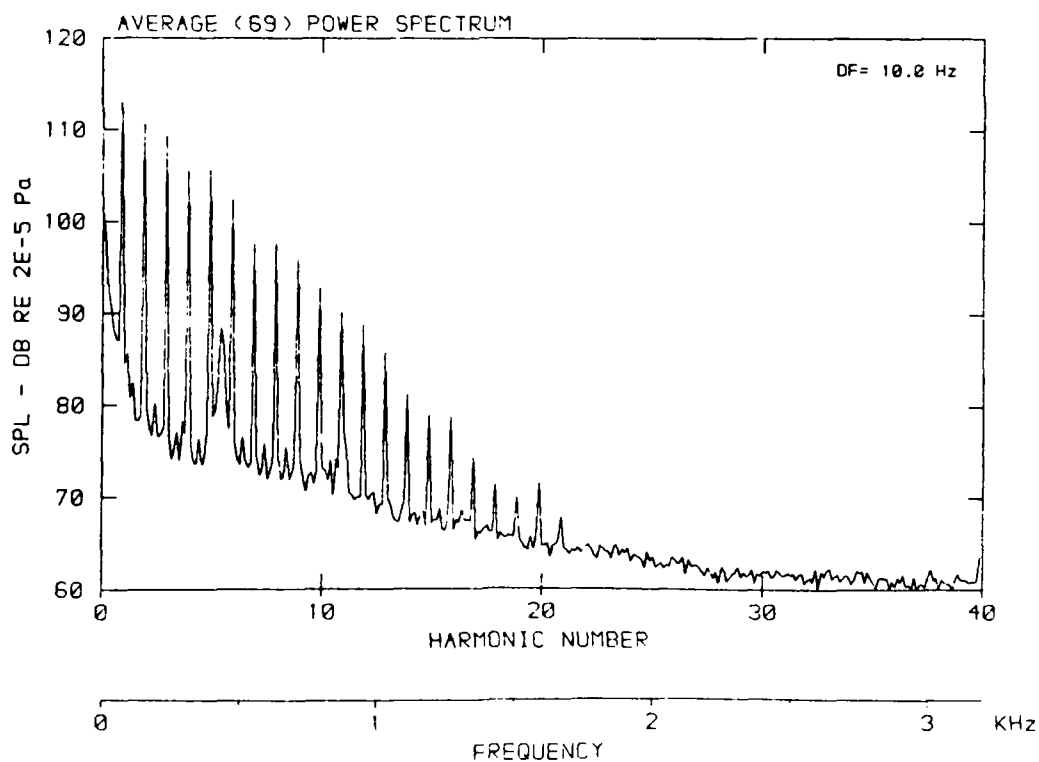
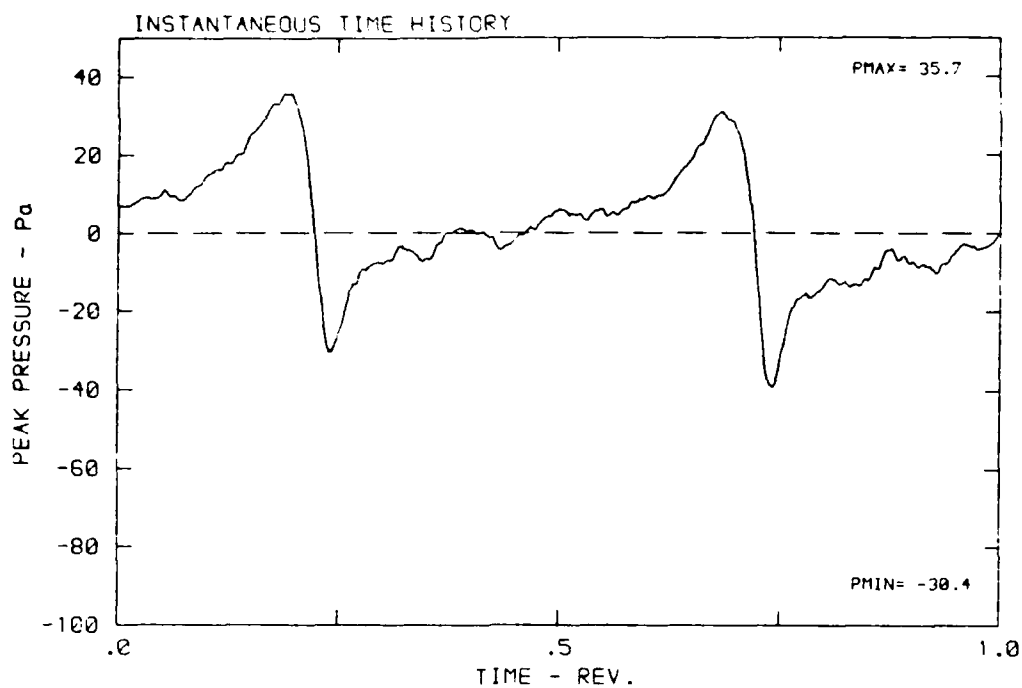
DATA POINT: FNC-2 RUN: 177 MP: 2

$\beta$ : 19.9° MH: .7661 n: 2400 rpm v/u: .202  $\phi$ : 3.6° T: 287.7 K



DATA POINT: FNC-2 RUN: 177 MP: 3

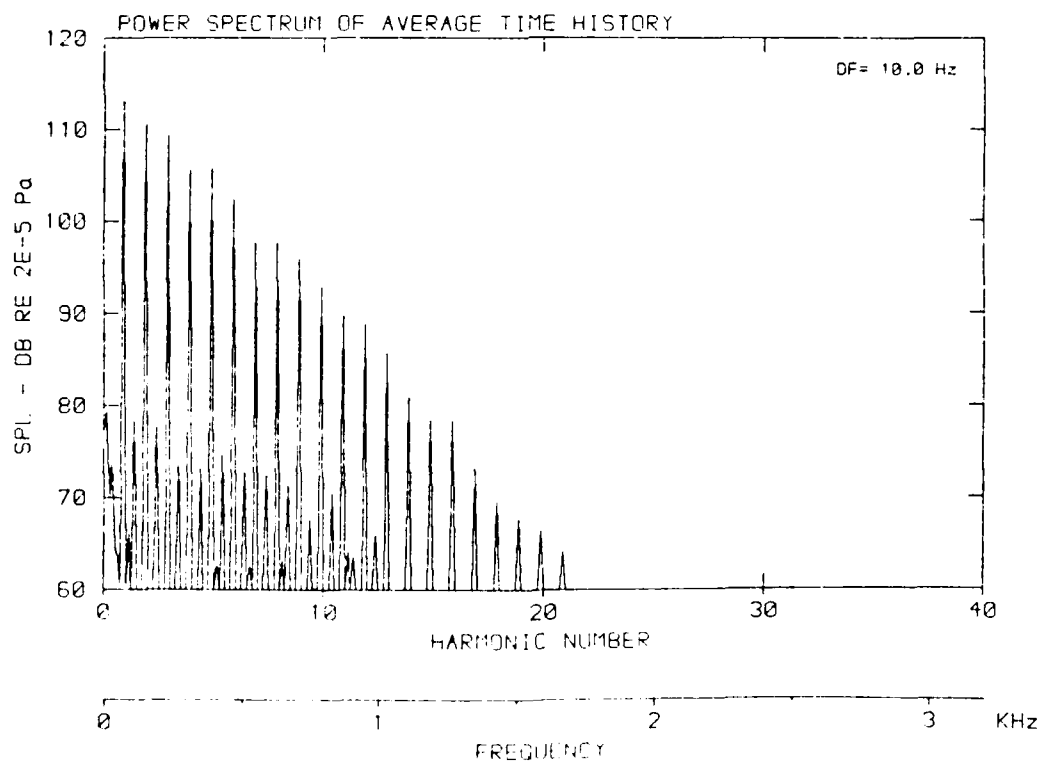
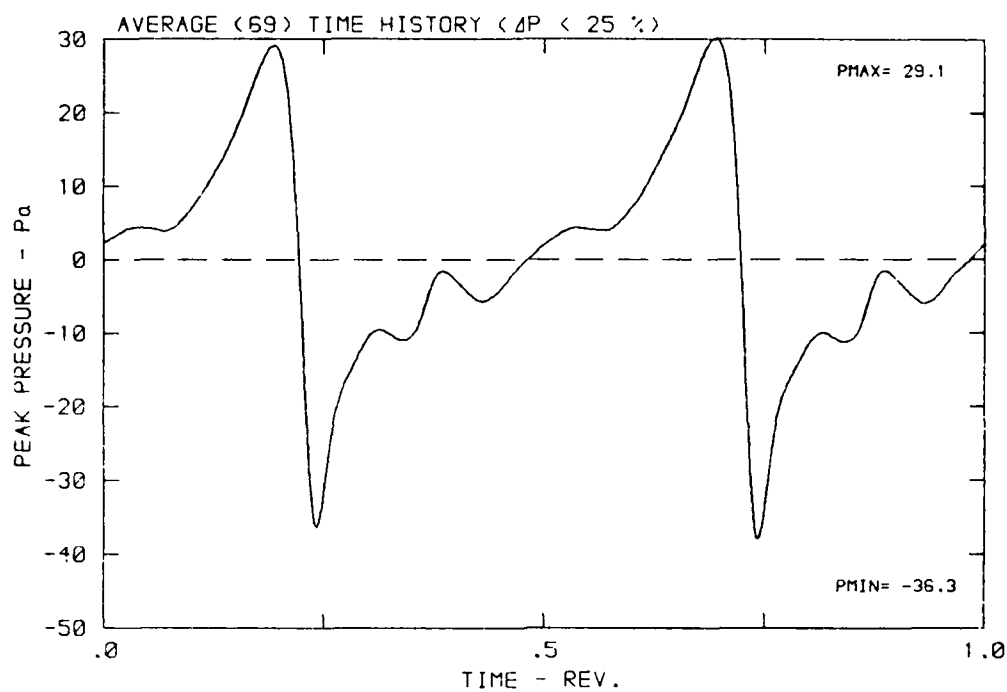
$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $v/u$ : .202  $\phi$ : 3.6° T: 287.7 K





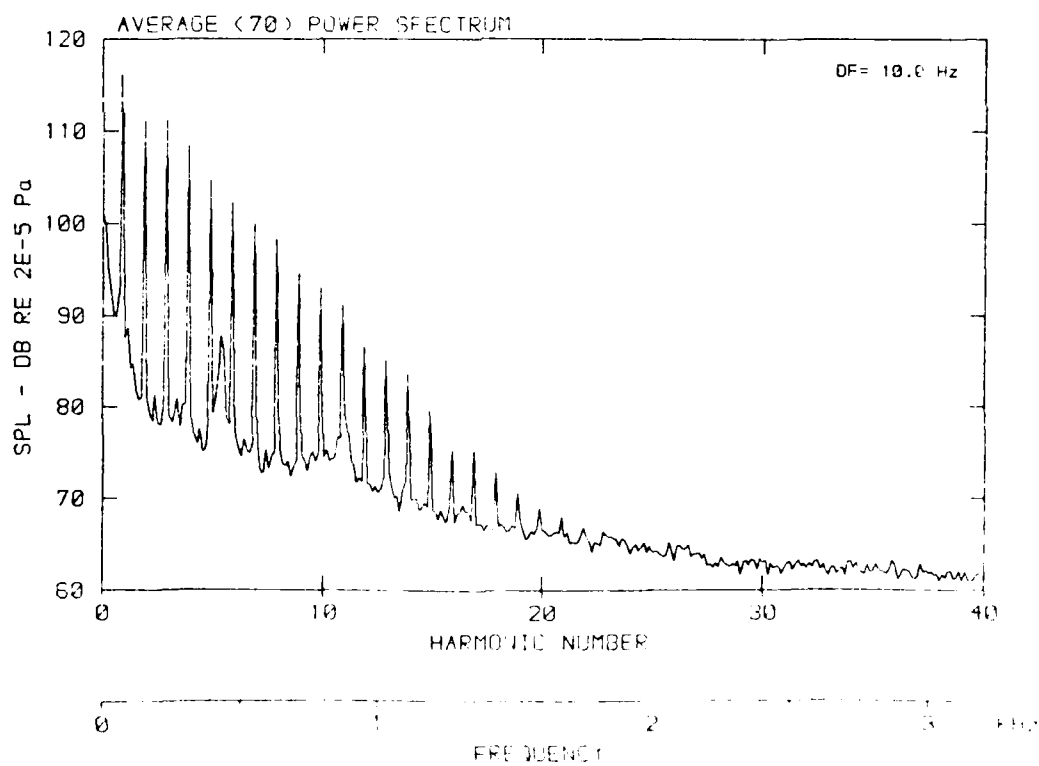
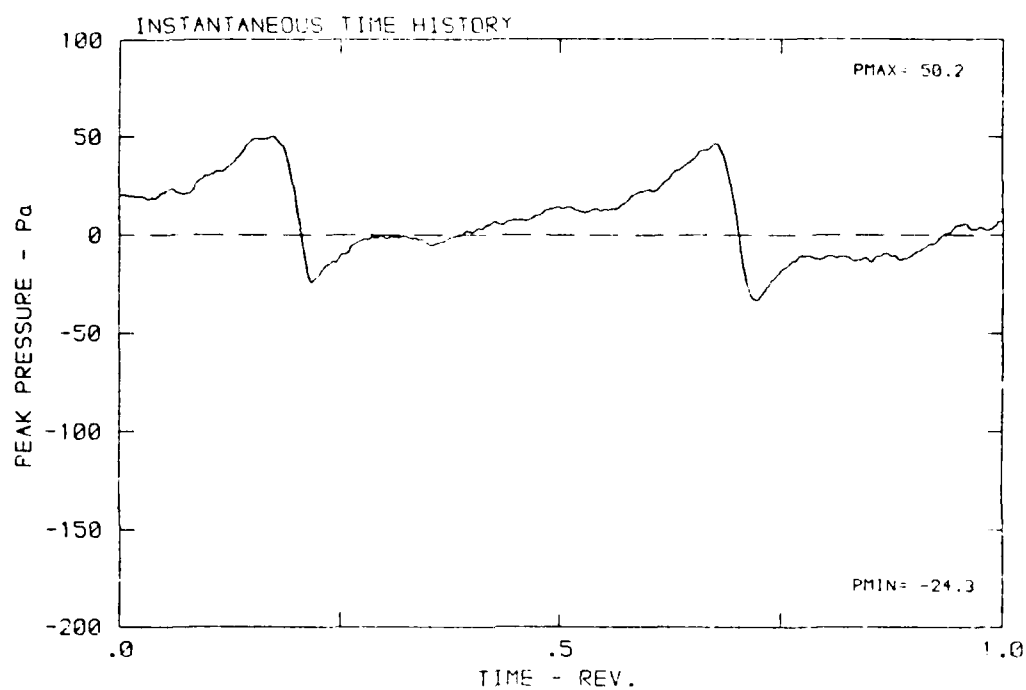
DATA POINT: FNC-2 RUN: 177 MP: 3

$\beta$ : 19.9° MH: .7661 n: 2400 rpm v/u: .202  $\phi$ : 3.6° T: 287.7 K



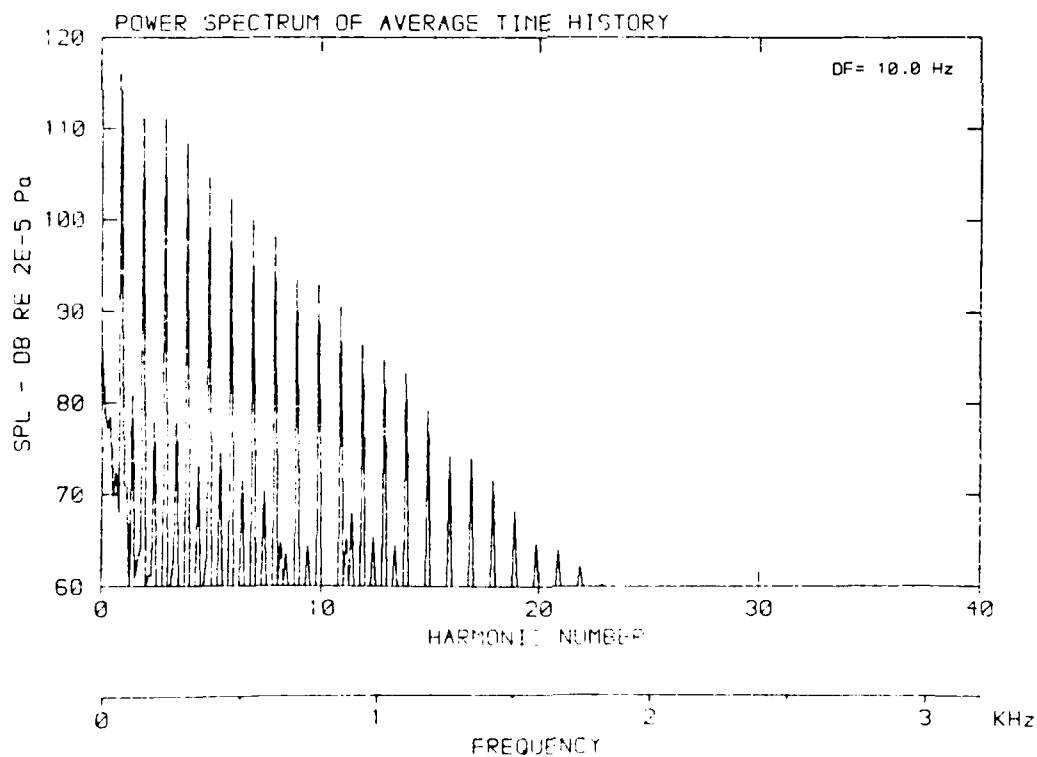
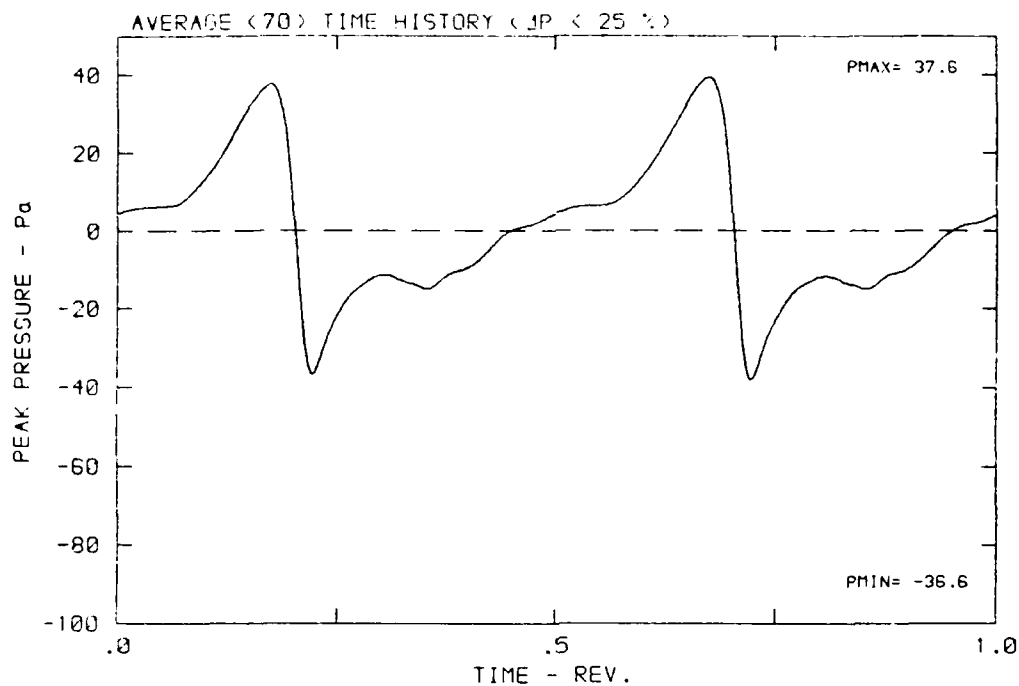
DATA POINT: FNC-2 RUN: 177 MP: 4

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $v/u$ : .202  $\phi$ : 3.6° T: 287.7 K



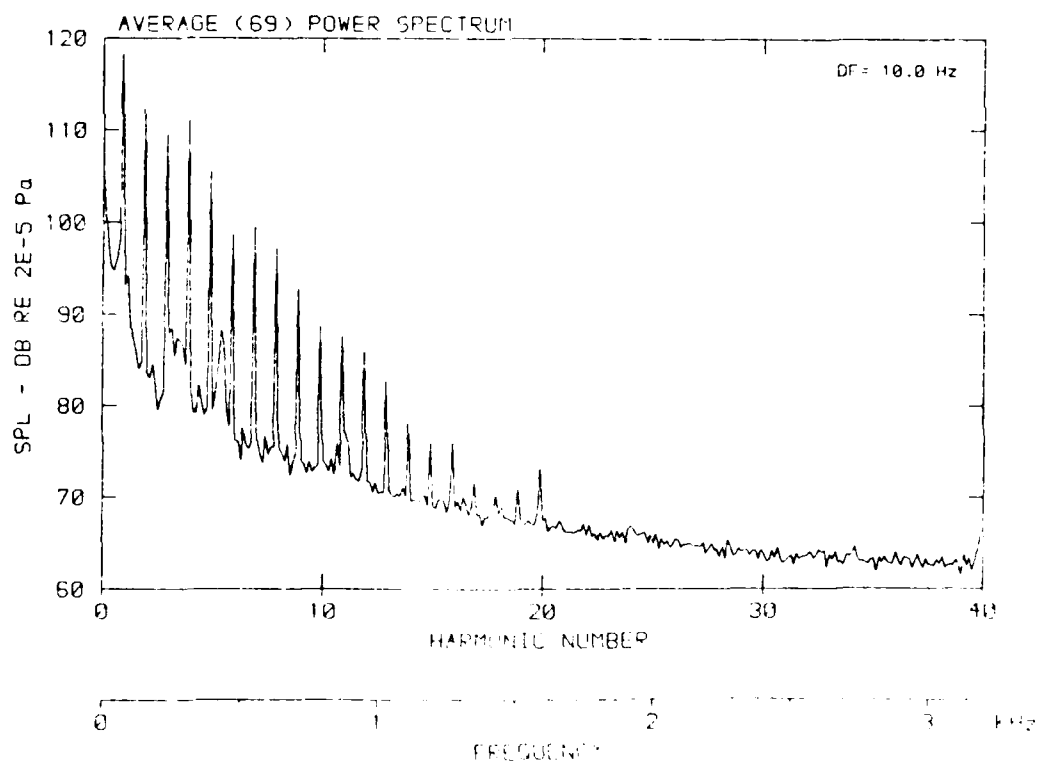
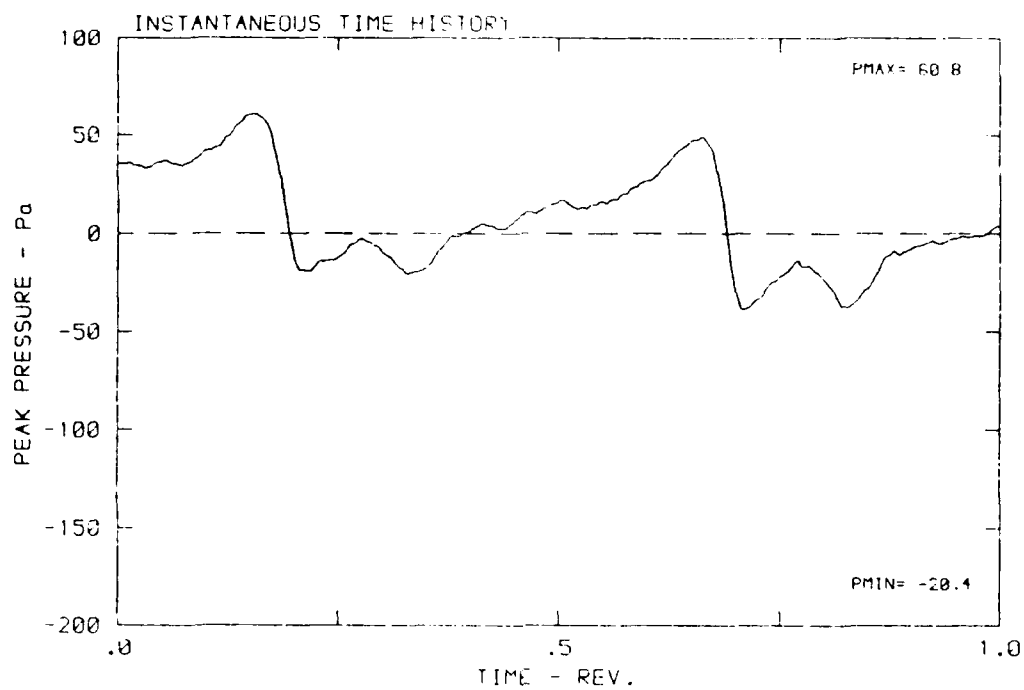
DATA POINT: FNC-2 RUN: 177 MP: 4

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $v/u$ : .202  $\phi$ : 3.6° T: 287.7 K



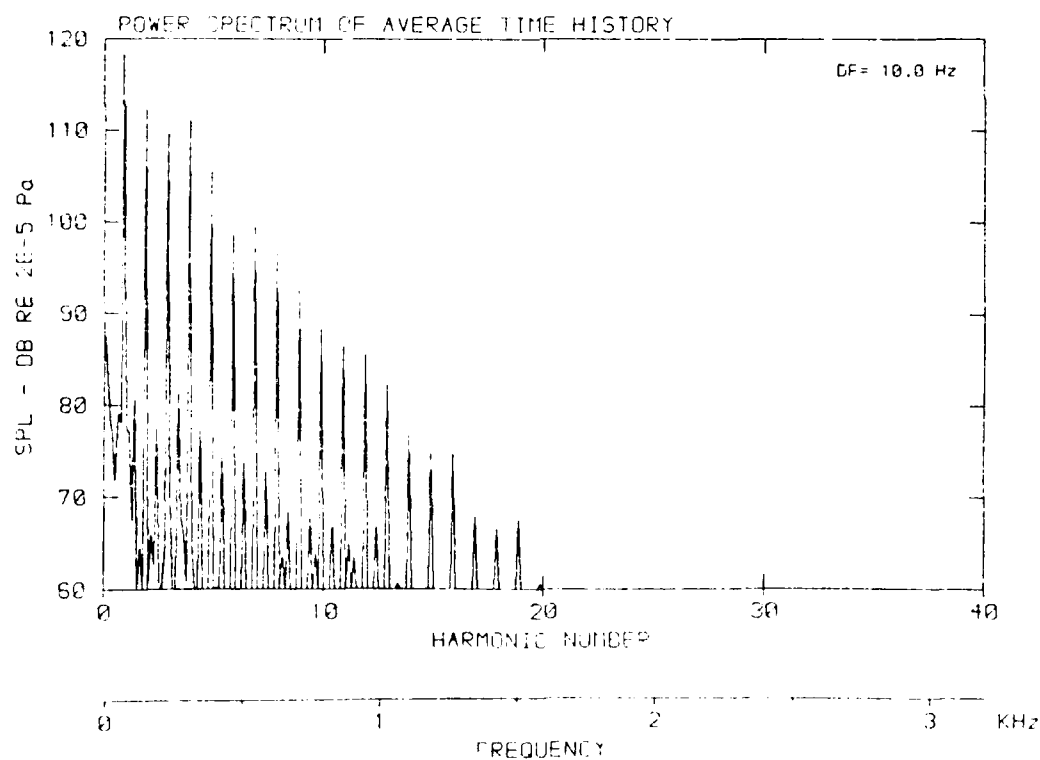
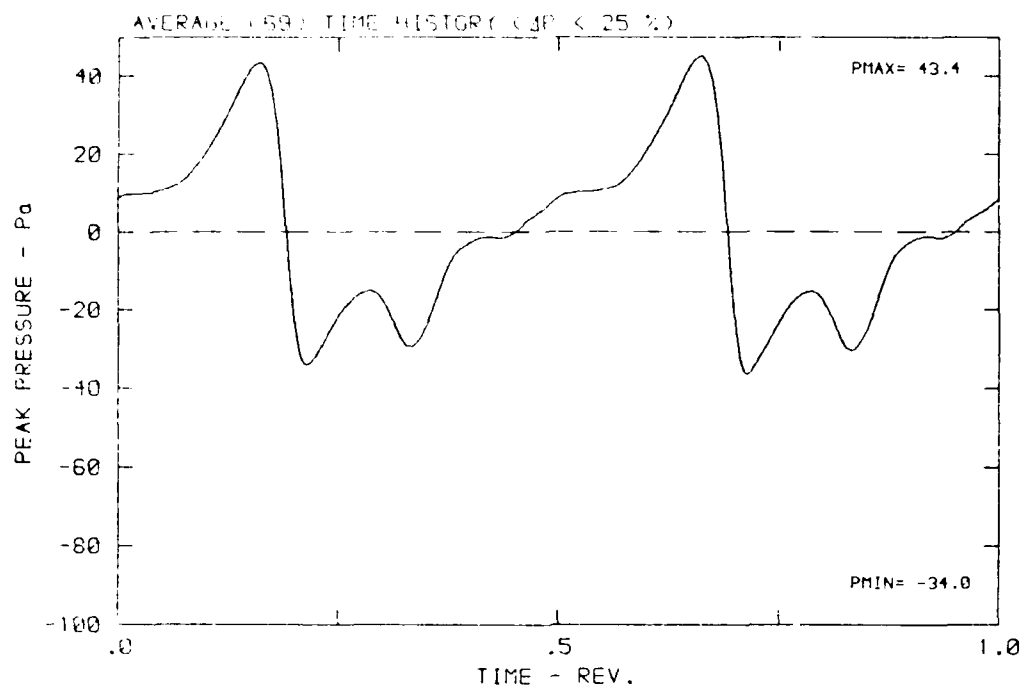
DATA POINT: FNC-2 RUN: 177 MP: 5

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $v_{tu}$ : .202  $\phi$ : 3.6° T: 267.7 K



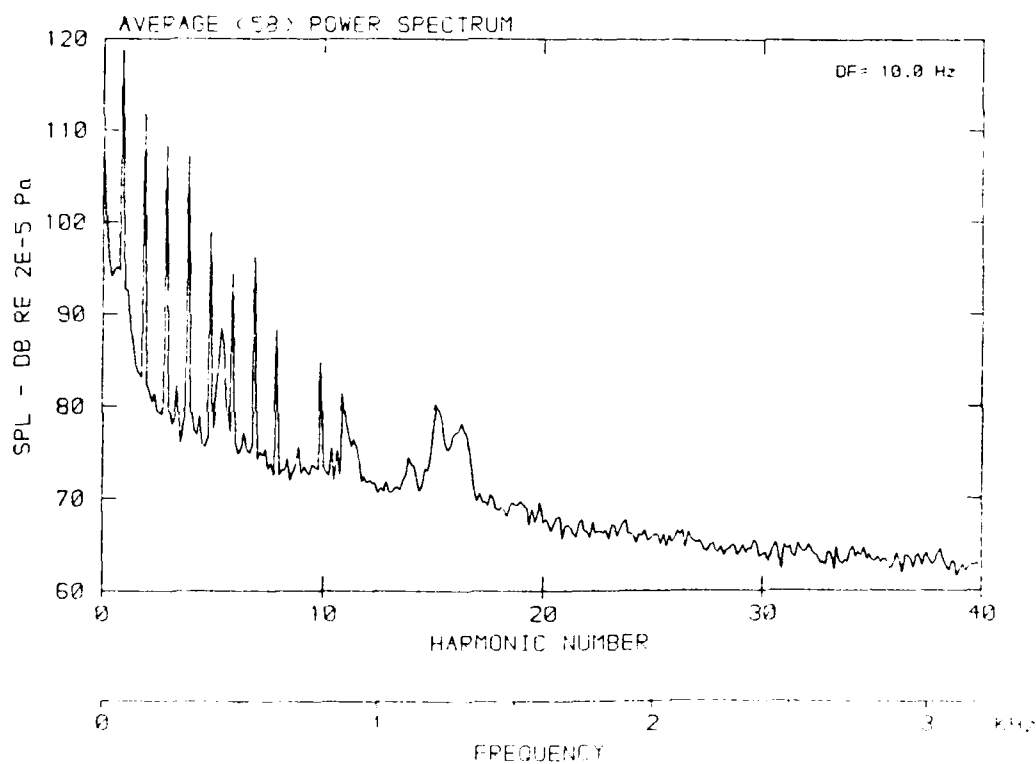
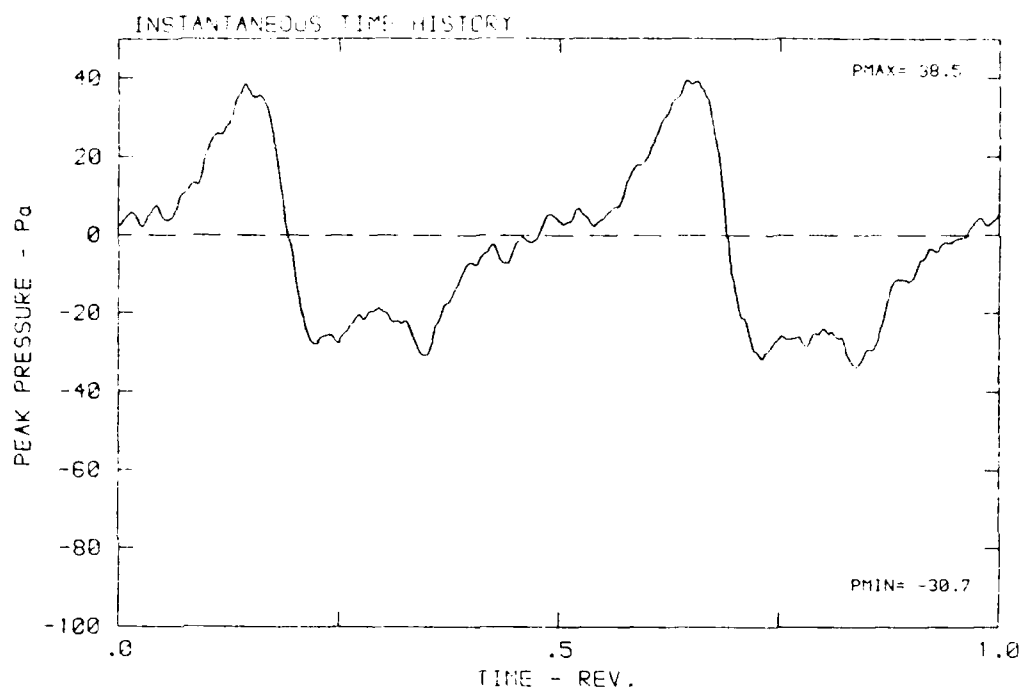
DATA POINT: FNC-2 RUN: 177 MP: 5

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $\nu_{cu}$ : .202  $\phi$ : 3.6° T: 287.7 K



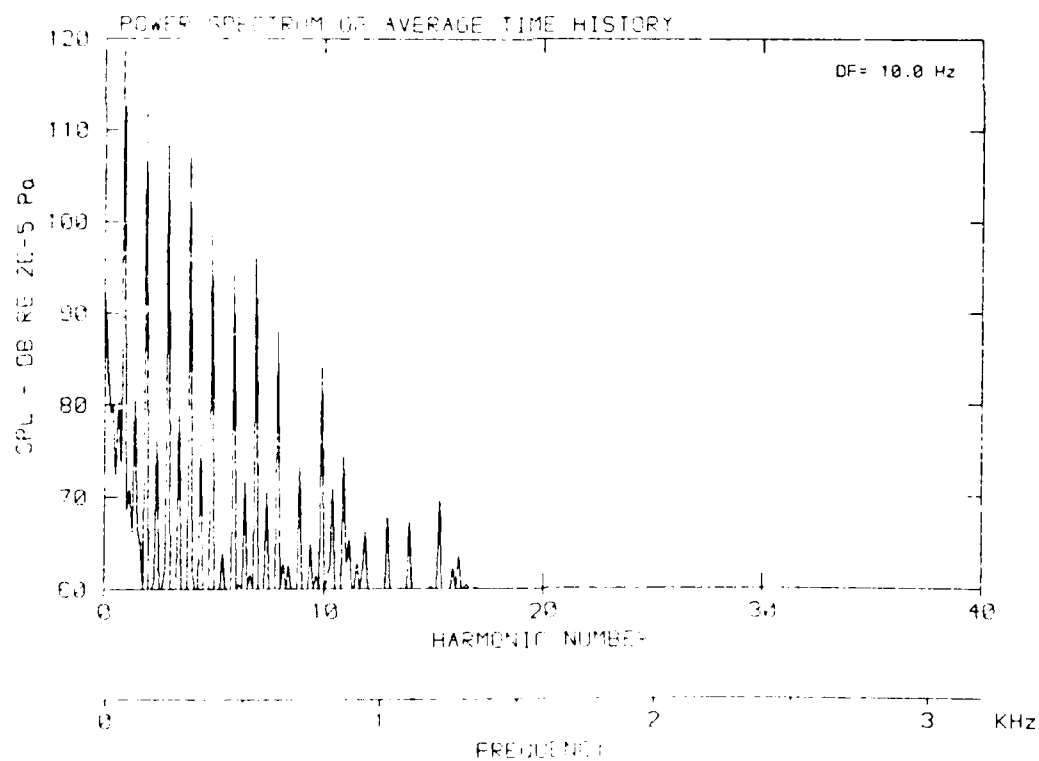
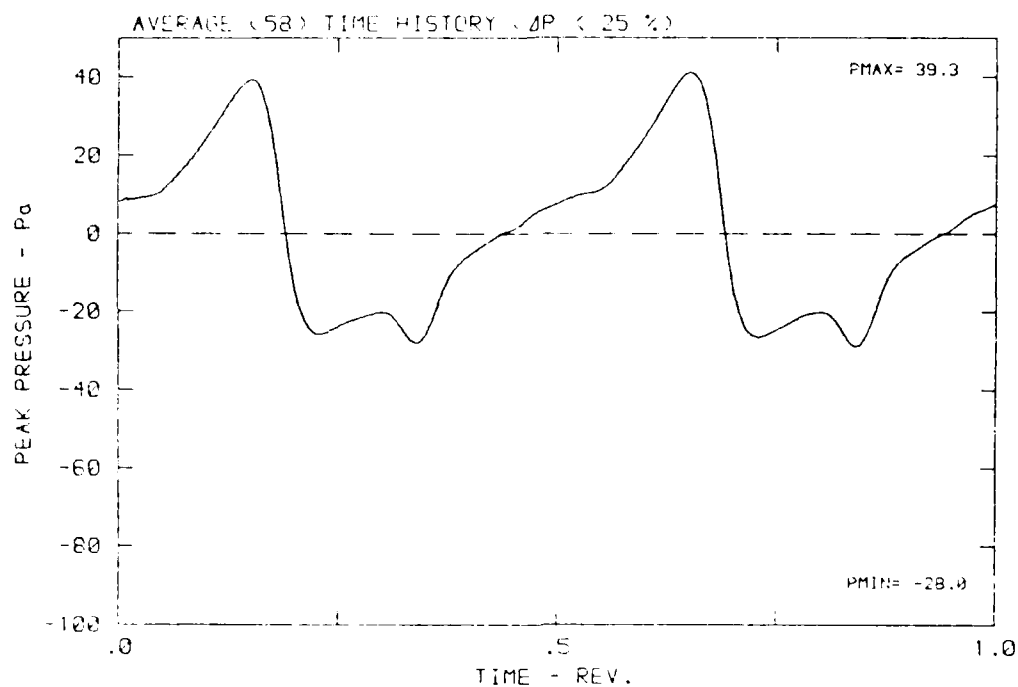
DATA POINT: ENC 2 RUN: 177 MP: E

$\beta$ : 19.9° MH: .7661 n: 2400 rpm v/u: .202  $\phi$ : 3.6° T: 280.7°



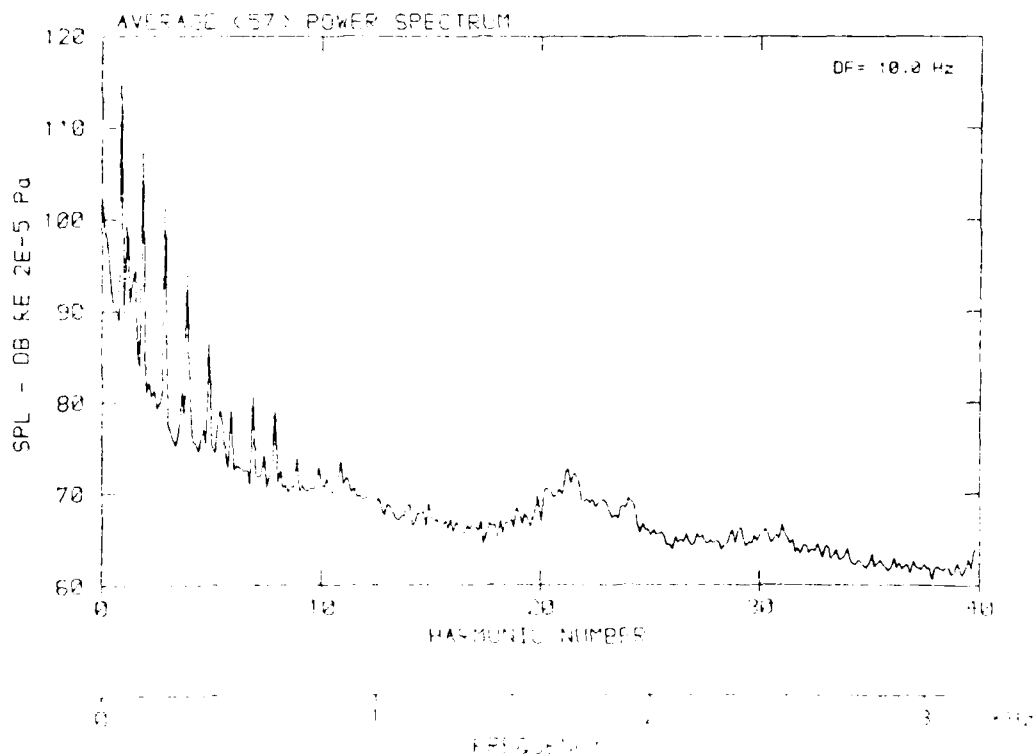
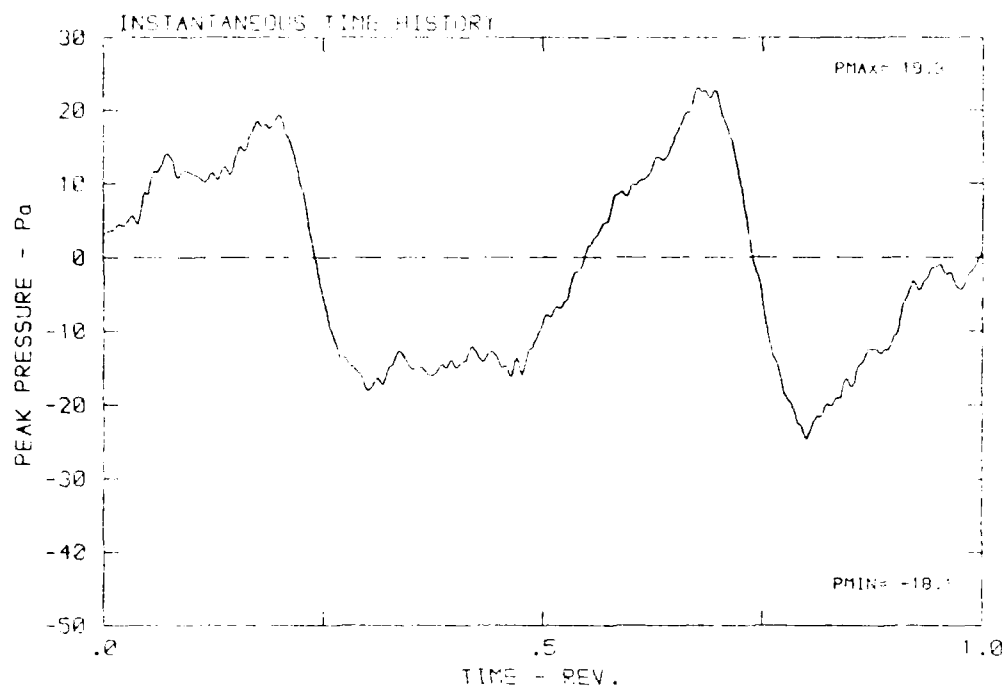
DATA POINT: FNC-2 RUN: 177 MP: 6

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $v/u$ : .202  $\phi$ : 3.6° T: 287.7 K



DATA POINT: FND-2 RUN: 177 NF: 7

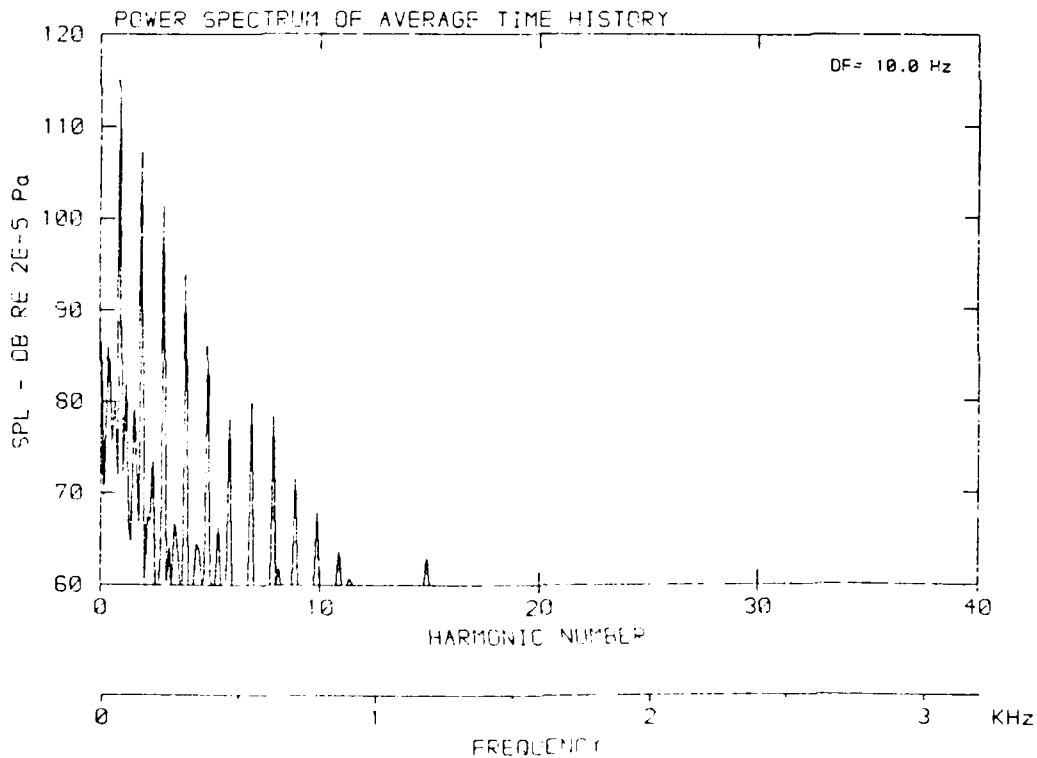
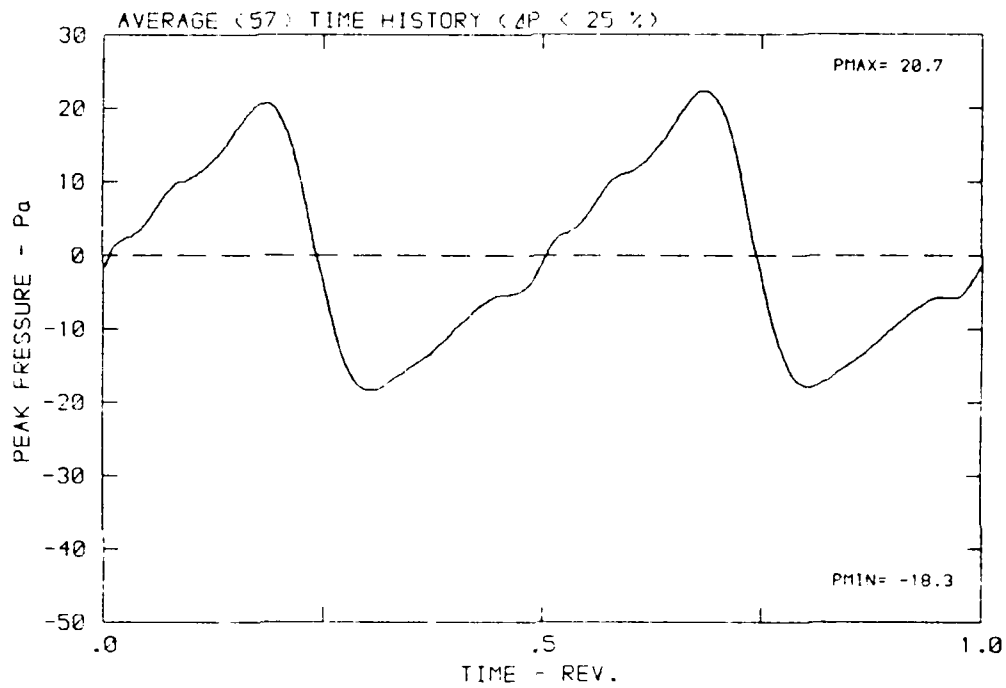
$\beta$ : 19.9° MH: .766' n: 2400 rpm  $v/u$ : .202  $\phi$ : 3.5° T: 290.0°





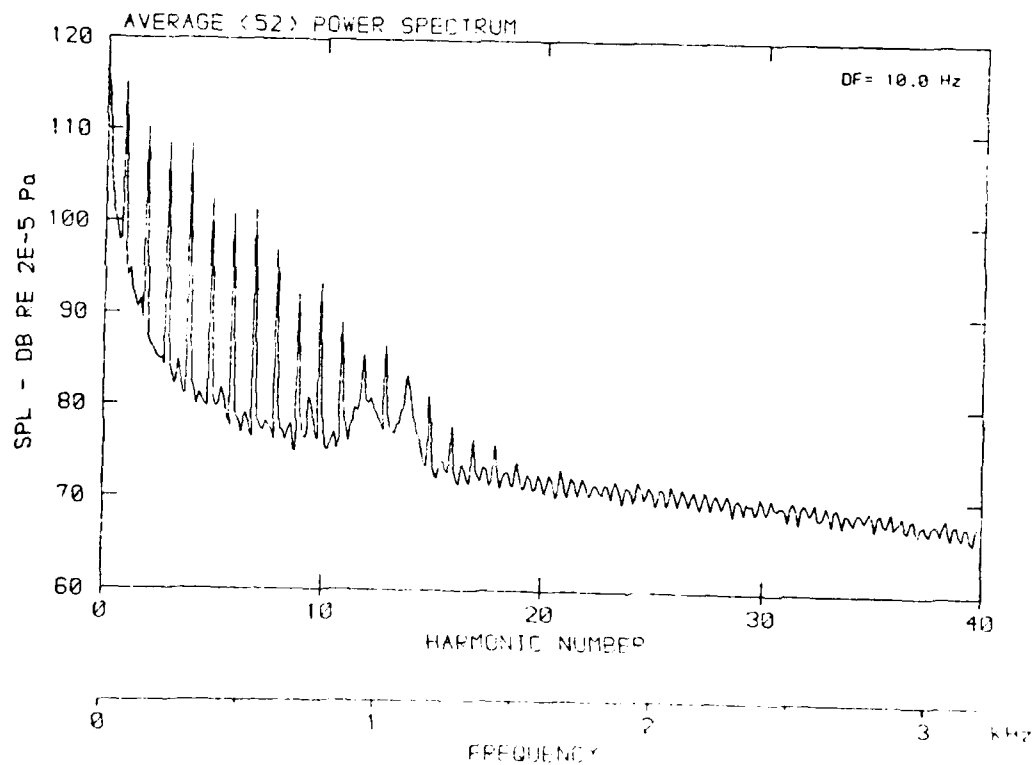
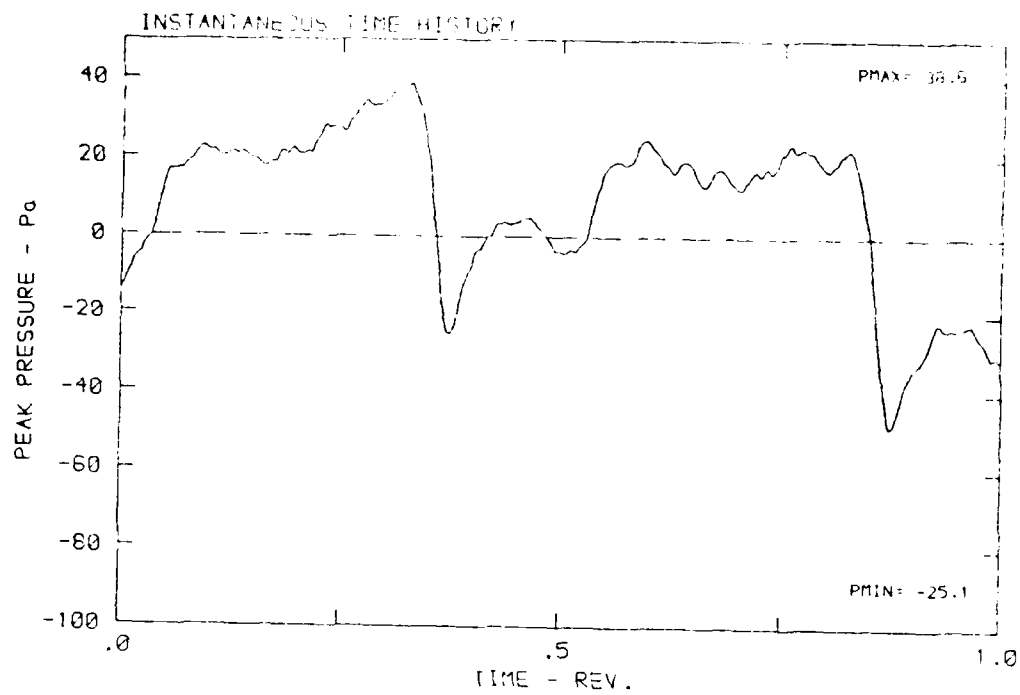
DATA POINT: FNC-2 RUN: 177 MP: 7

$\beta$ : 19.9° MH: .7661 n: 2400 rpm v/u: .202  $\phi$ : 3.6° T: 287.7 K



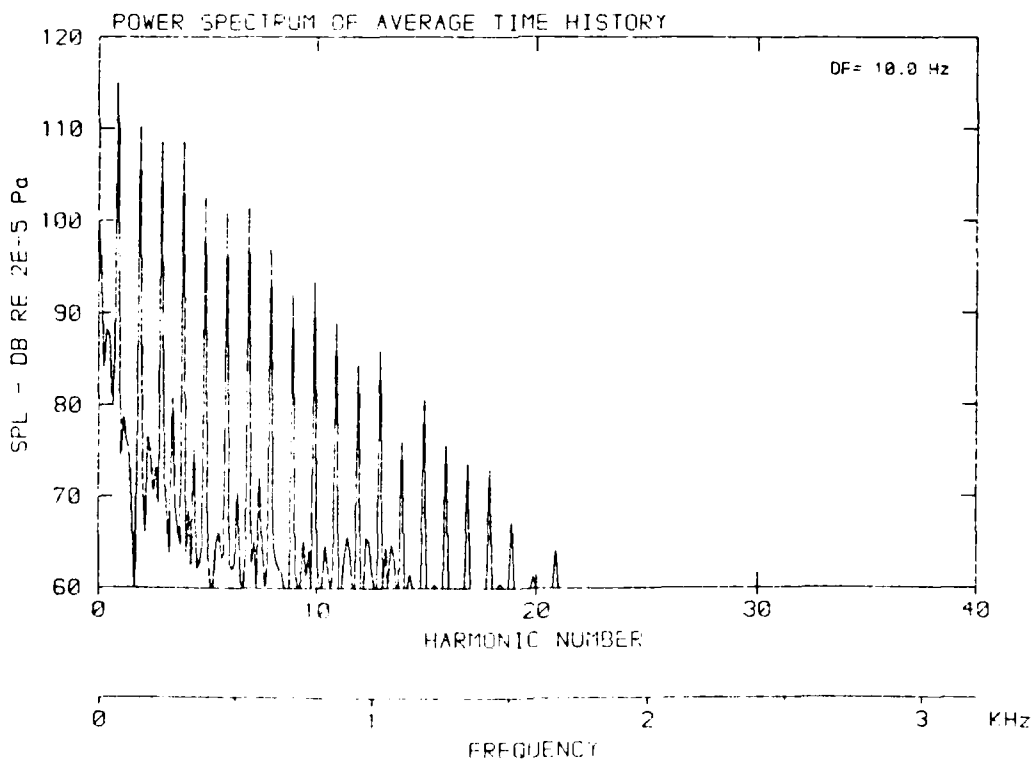
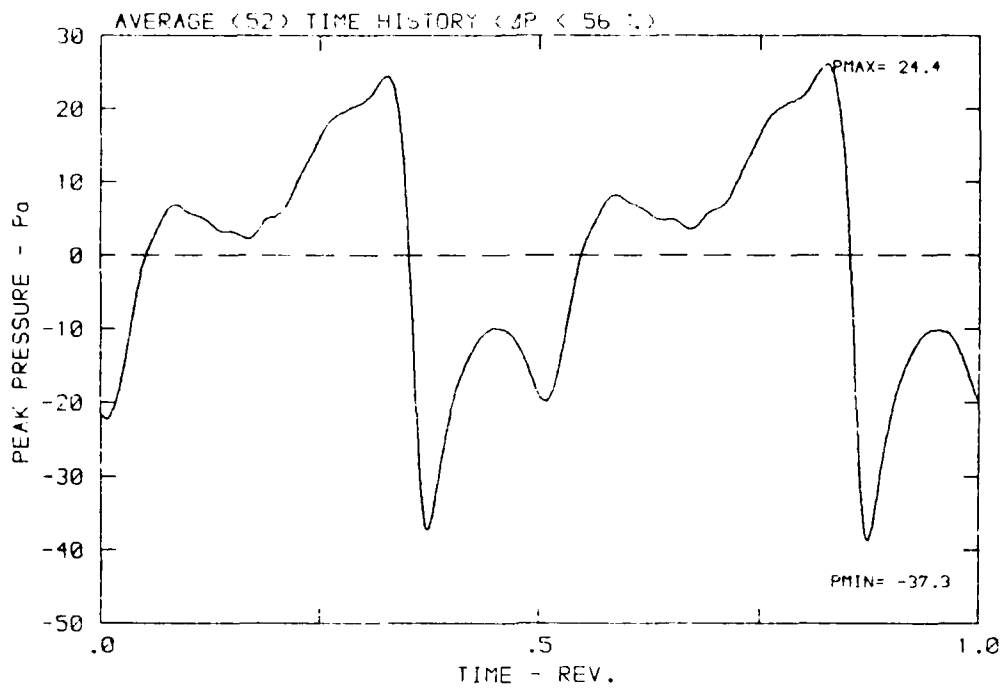
DATA POINT: FNC-1 RUN: 177 MF: 3

$\beta$ : 19.9° MF: .7561  $\omega$ : 2400 rpm  $\nu$ : .201  $\phi$ : 3.6° T: 287.7



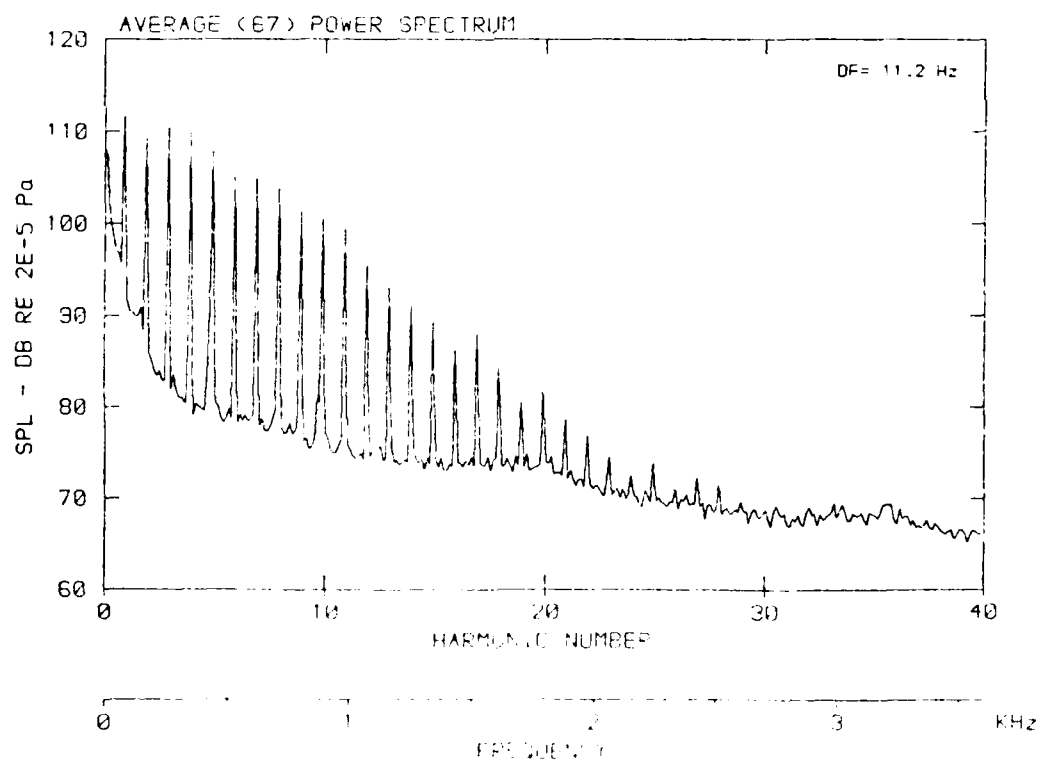
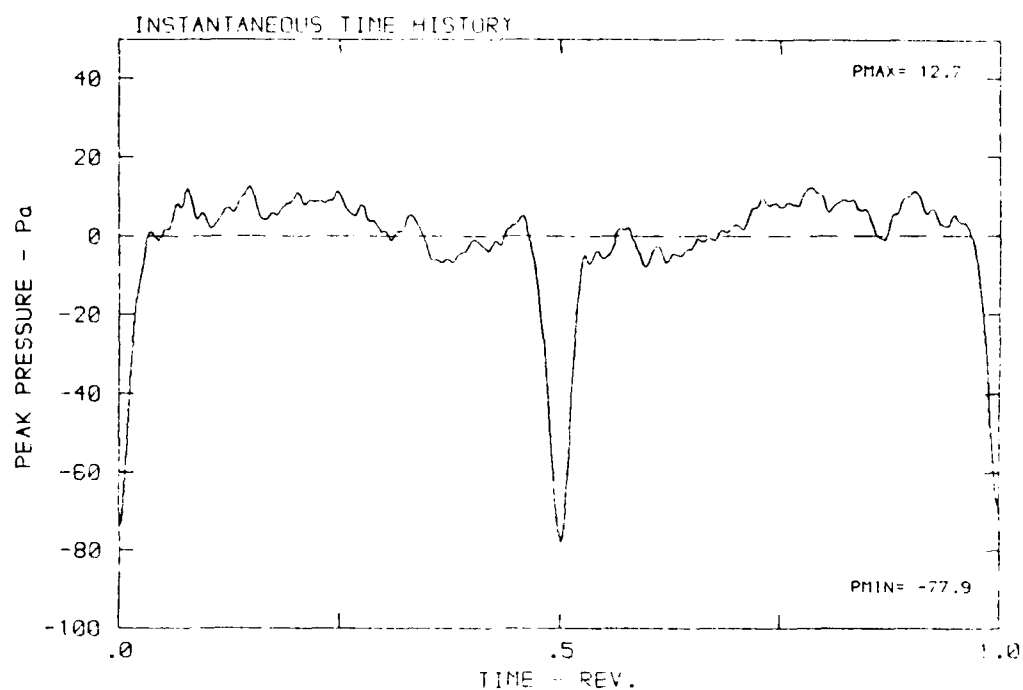
DATA POINT: FNC-2 RUN: 177 MP: 9

$\beta$ : 19.9° MH: .7661 n: 2400 rpm  $\nu$ : .202  $\phi$ : 3.6° T: 287.7 K



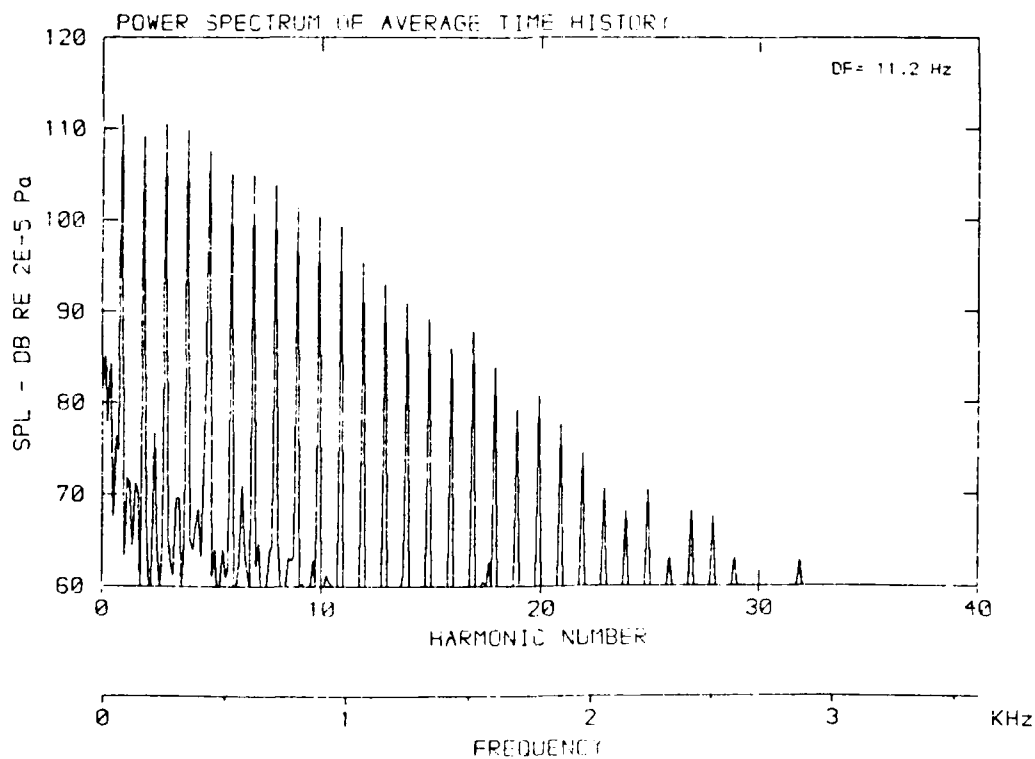
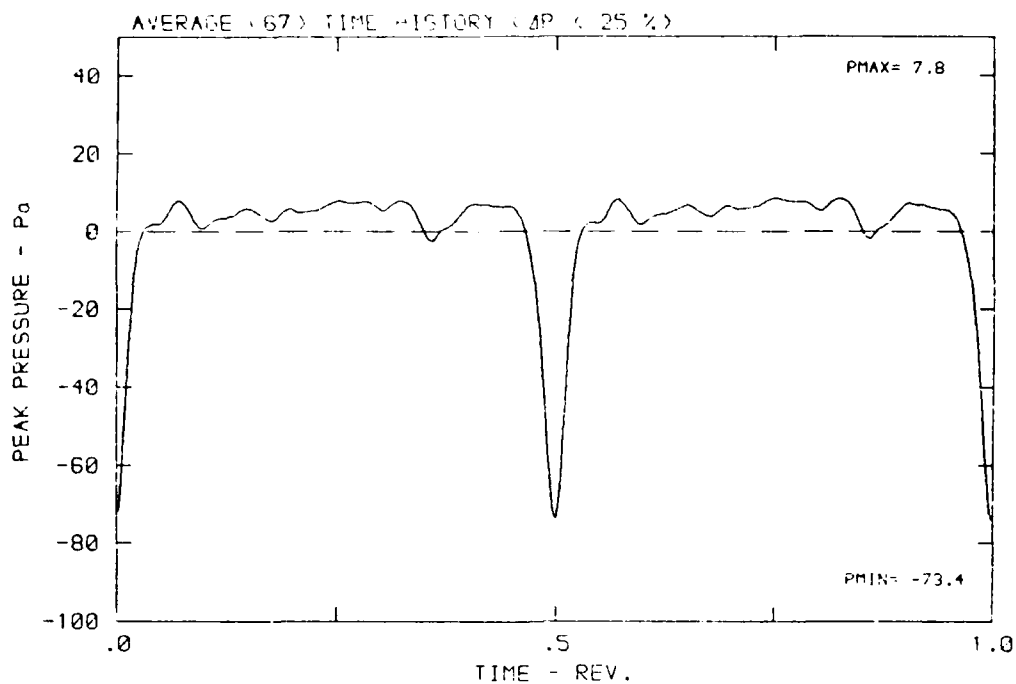
DATA POINT: FNC-3 RUN: 178 MF: 1

$\beta$ : 19.9° MH: .8740 n: 2700 rpm v/u: .269  $\phi$ : 3.6° T: 160.3 K



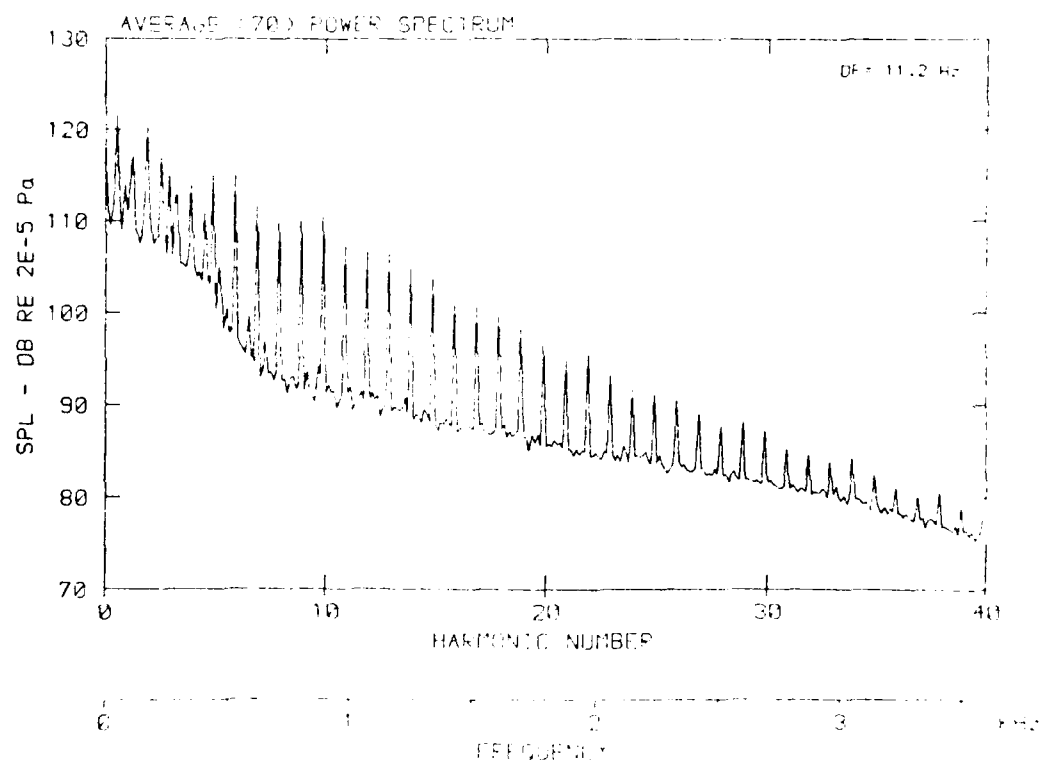
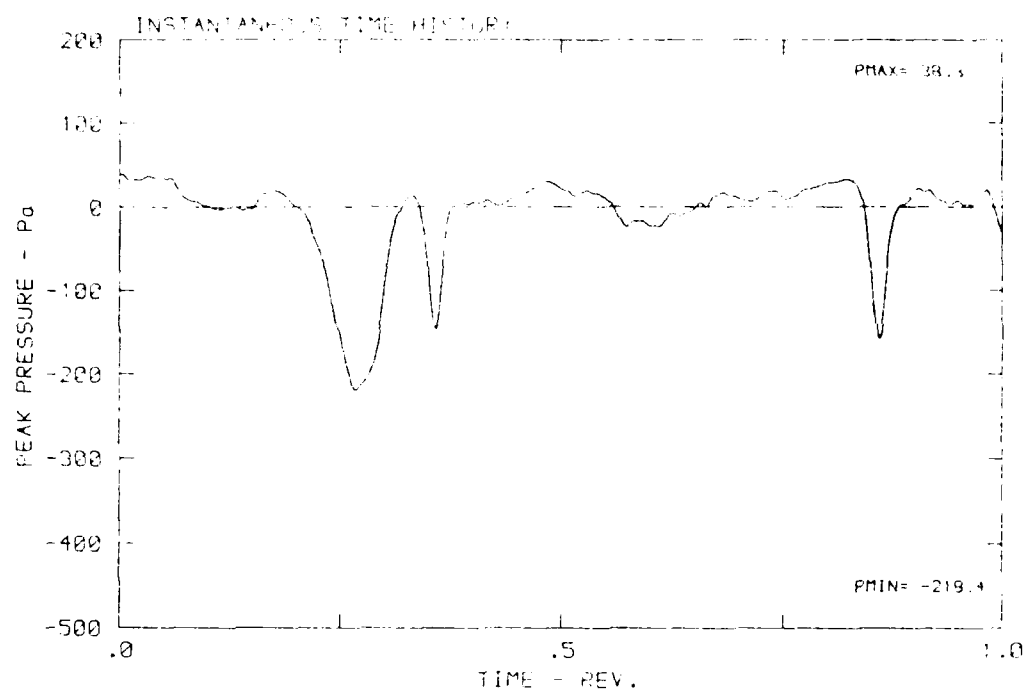
DATA POINT: FNC-3 RUN: 178 MP: 1

$\beta$ : 19.9° MH: .8740 n: 2700 rpm  $v/u$ : .269  $\phi$ : 3.6° T: 288.3 K



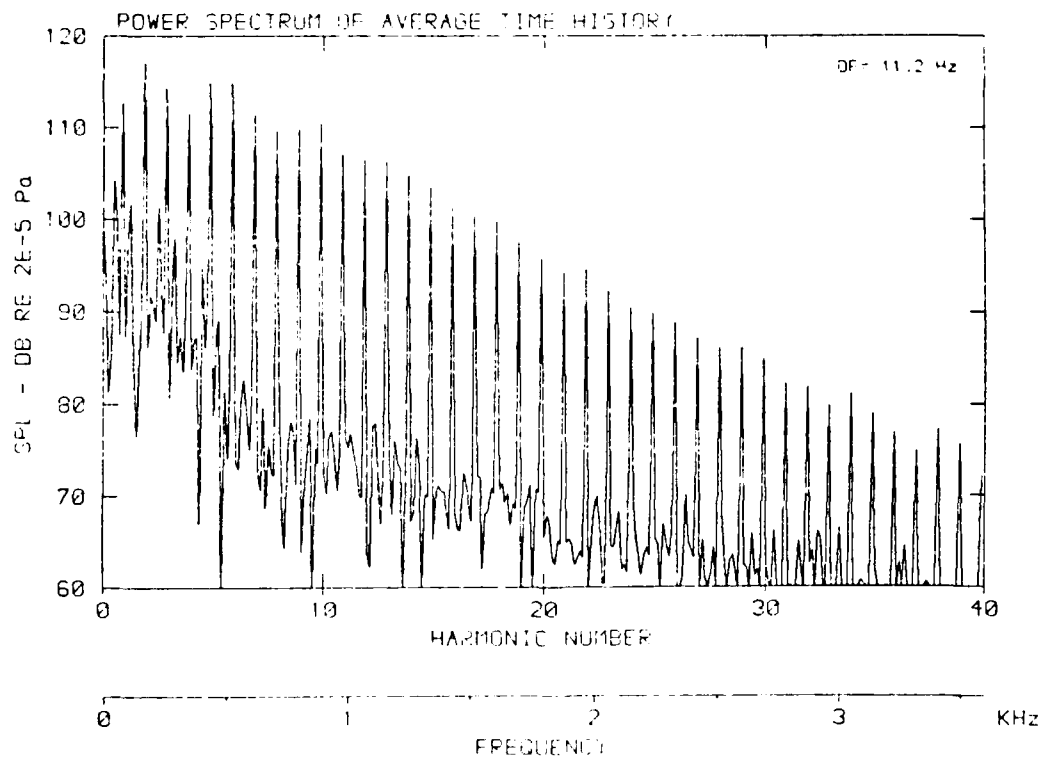
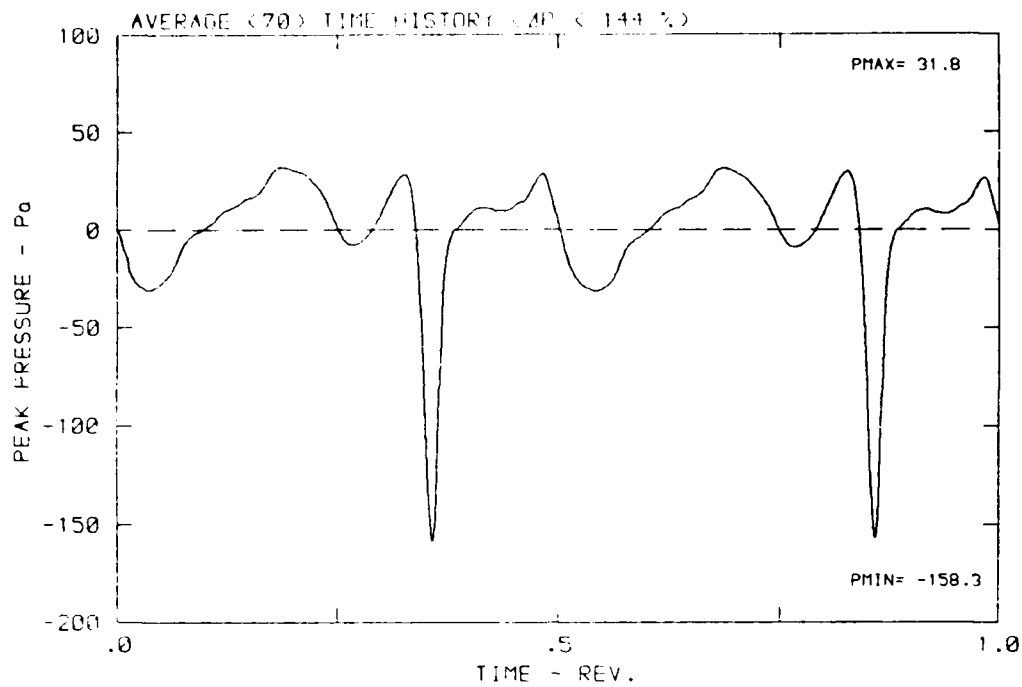
DATA POINT: END-3 RUN: 176 MF: 2

$\beta$ : 19.9° MH: .3740 n: 2700 rpm v/rot: .280  $\phi$ : 3.6°  $\tau$ : 284.2 k



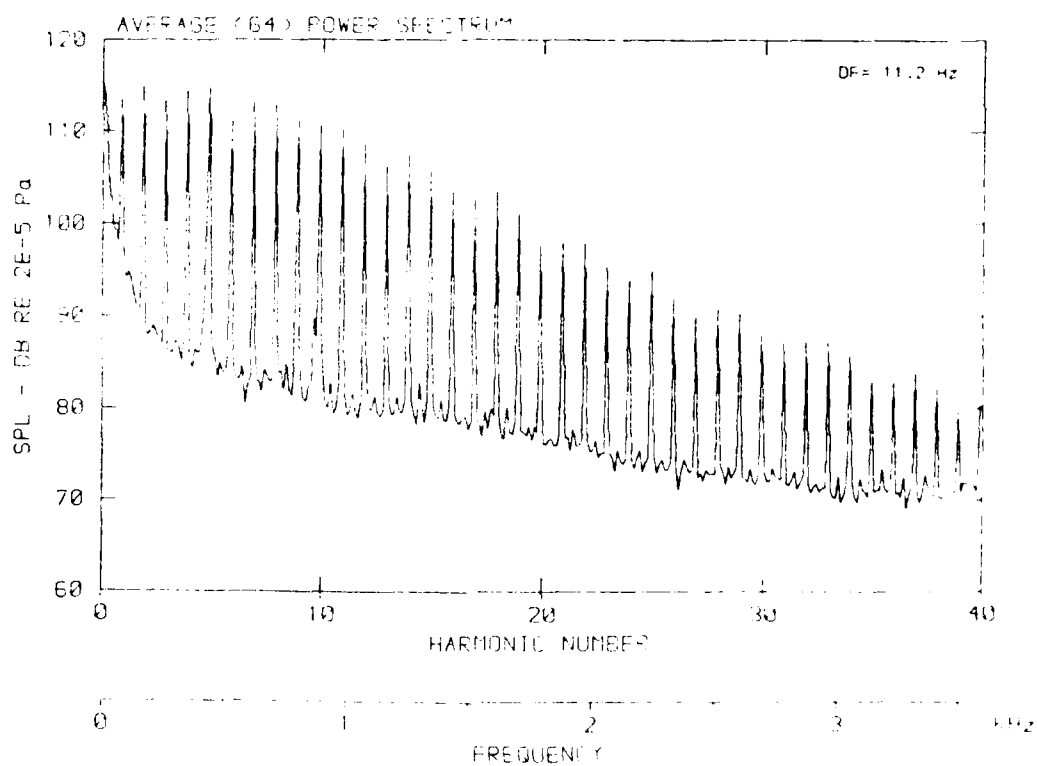
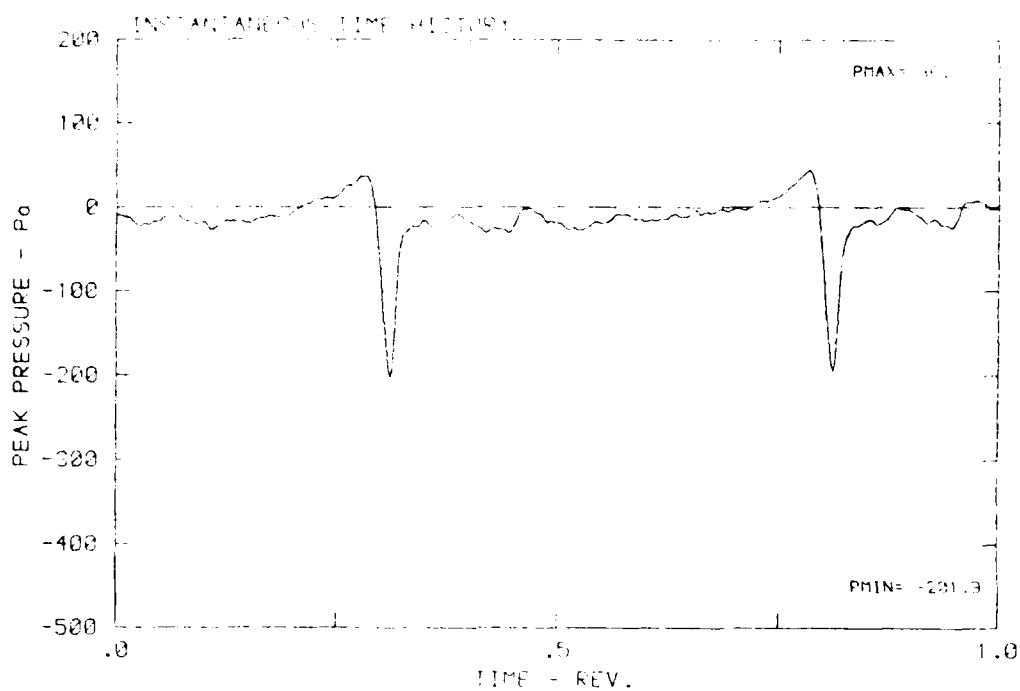
DATA POINT: FNC-3 RUN: 178 MP: 2

$\beta$ : 19.9° MH: .8740 n: 2700 rpm v: .269  $\phi$ : 3.6° T: 288.3 K



DATA POINT: RUN: 17

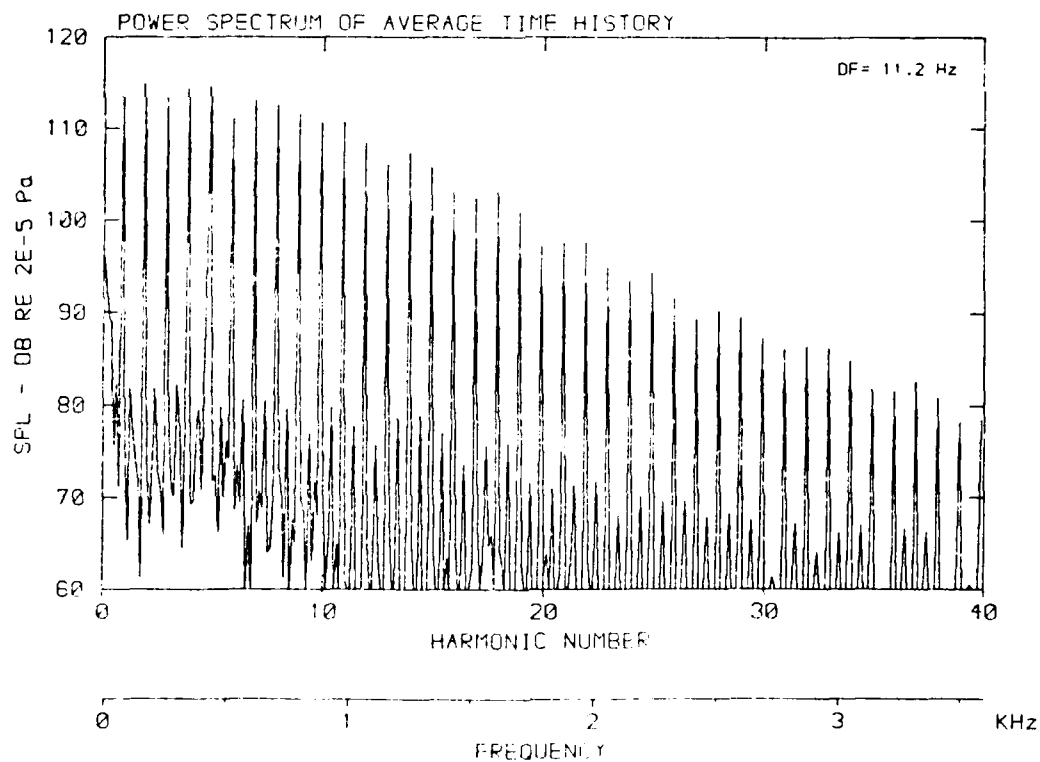
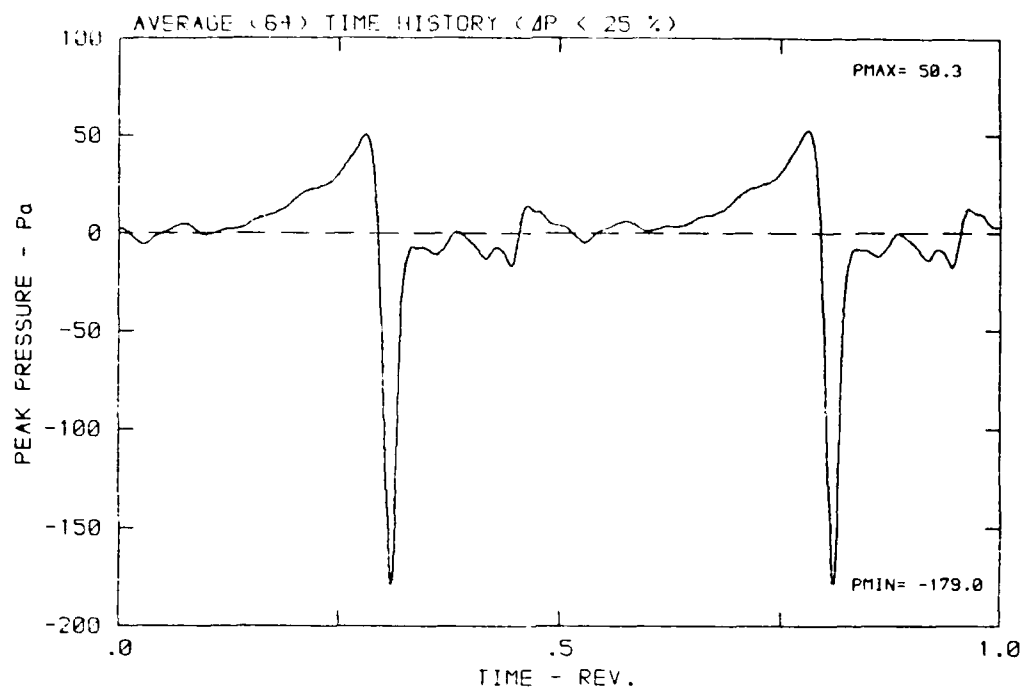
$\beta$ : 19.9°  $\mu$ : .9740  $\eta$ : 2700 rpm  $\nu$ : 1.266  $\phi$ : 3.6°  $\tau$ : 1.04





DATA POINT: FNC-3 RUN: 178 MP: 3

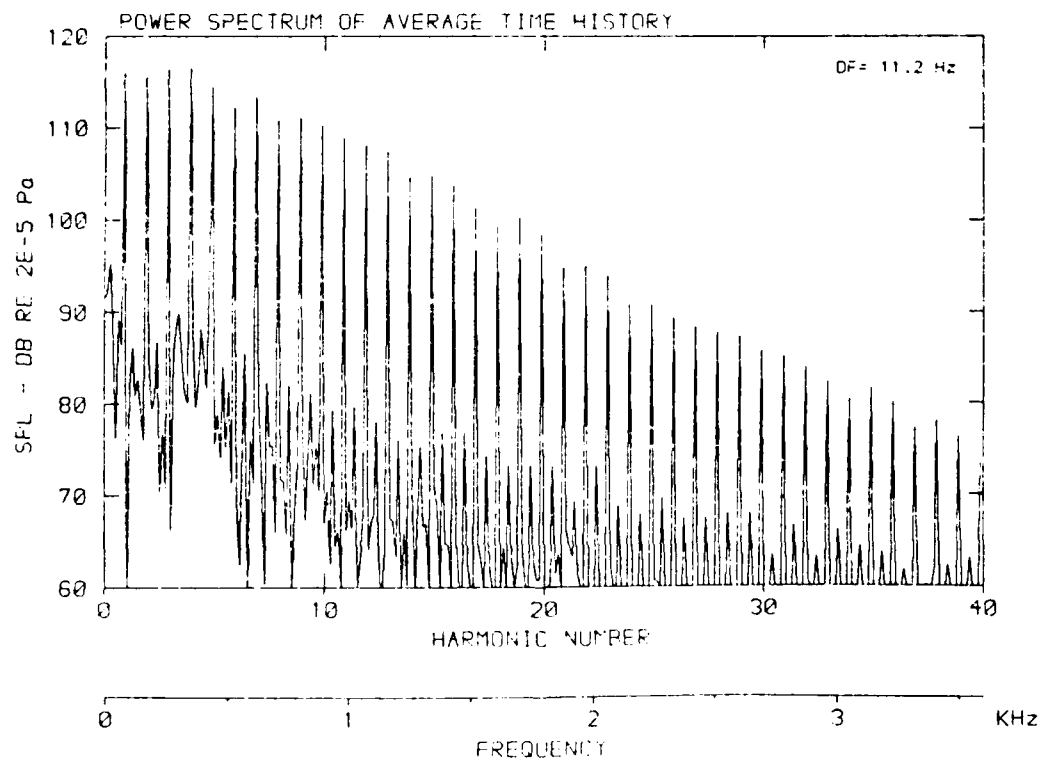
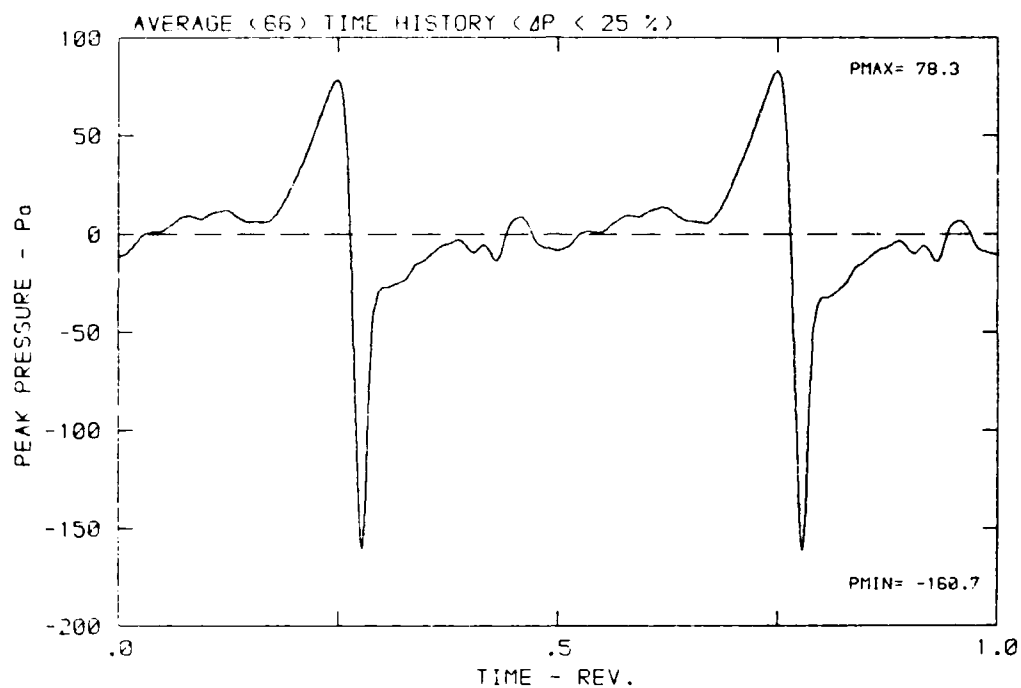
$\beta$ : 19.9° MH: .8740 n: 2700 rpm  $v/u$ : .269  $\phi$ : 3.6° T: 288.3 K



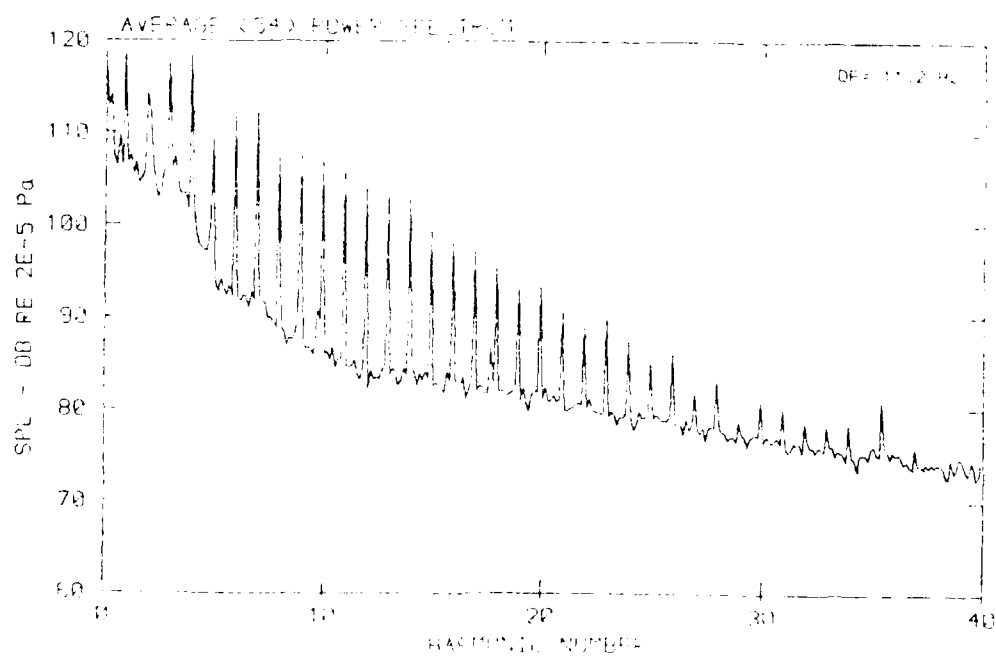
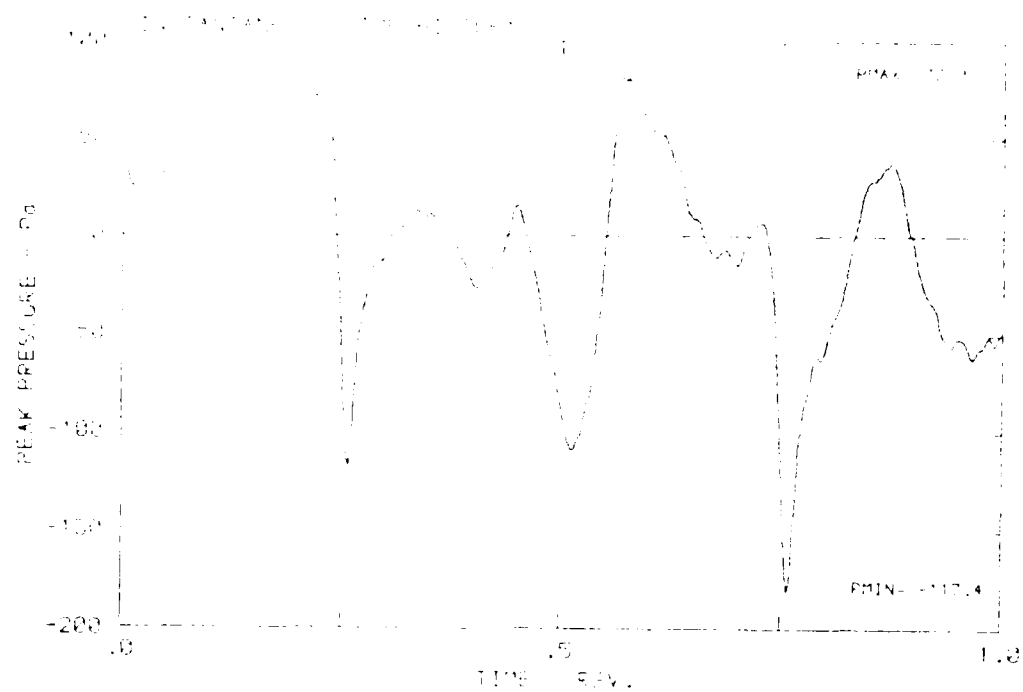


DATA POINT: FNC-3 RUN: 178 MP: 4

$\beta$ : 19.9° MH: .8740 n: 2700 rpm v/u: .269  $\phi$ : 3.6° T: 288.3 K



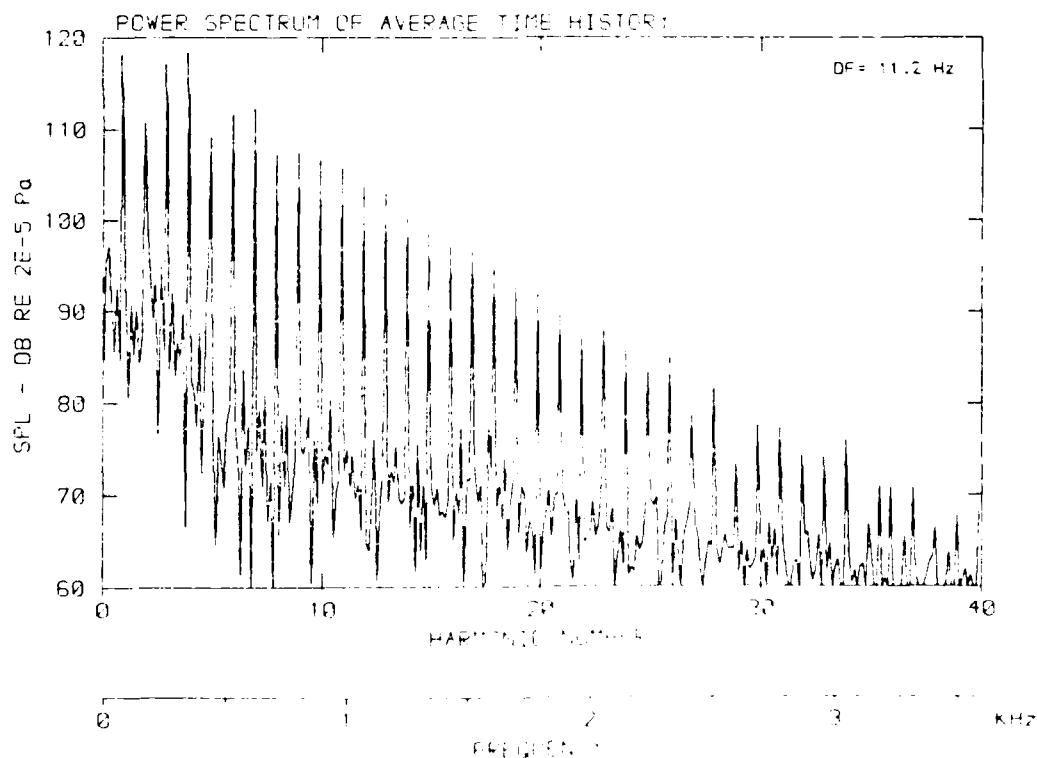
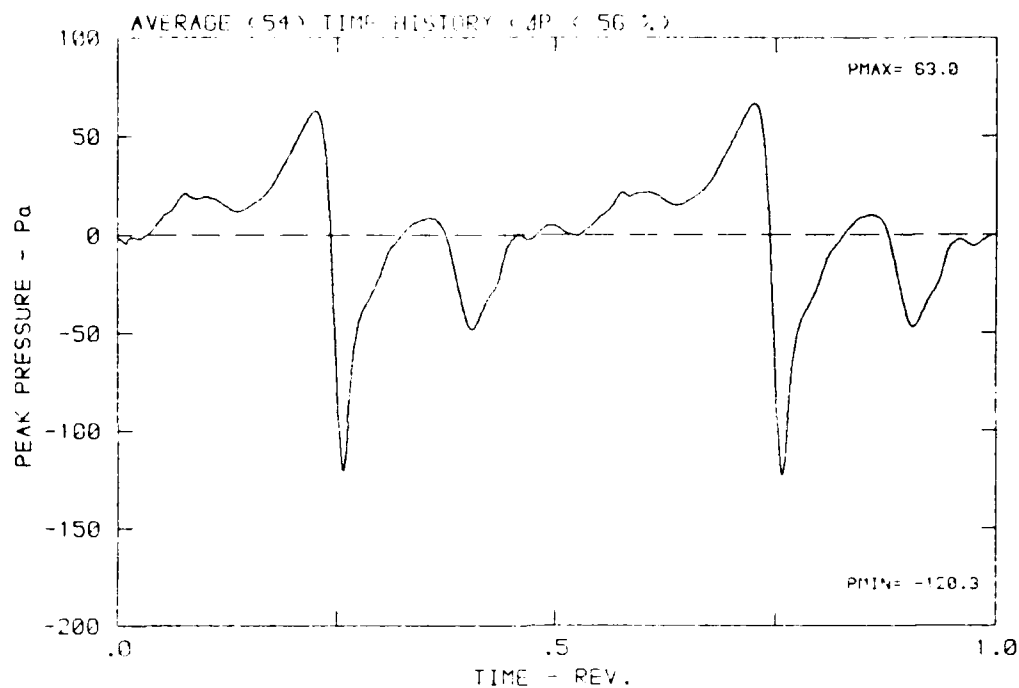
9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 8



10. *Journal of the American Medical Association*, 1990; 263: 1025-1028.

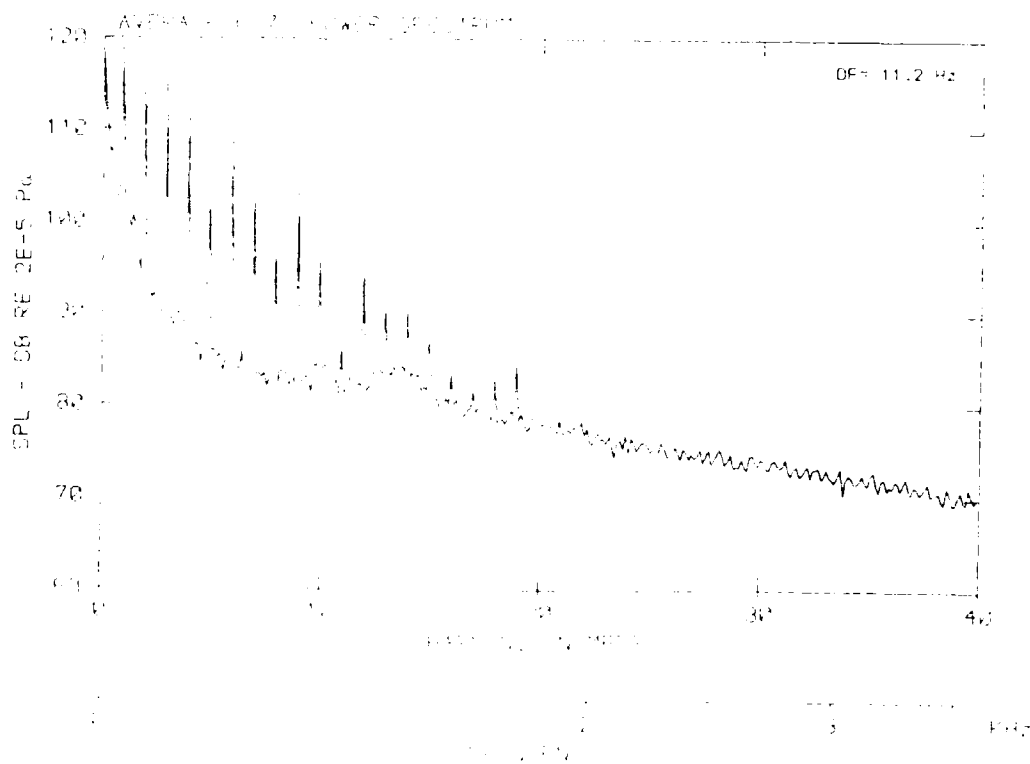
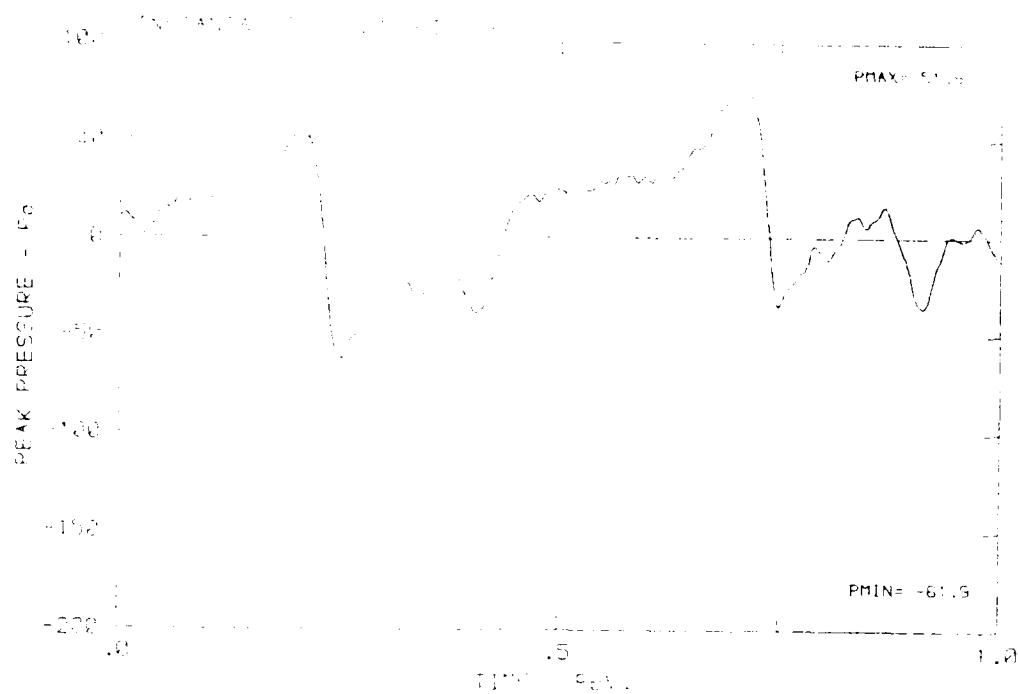
DATA POINT: FNC-3 RUN: 178 MP: 5

$\beta$ : 19.9° MH: .8740 n: 2700 rpm  $\nu$ : .269  $\phi$ : 3.6° T: 288.3 K



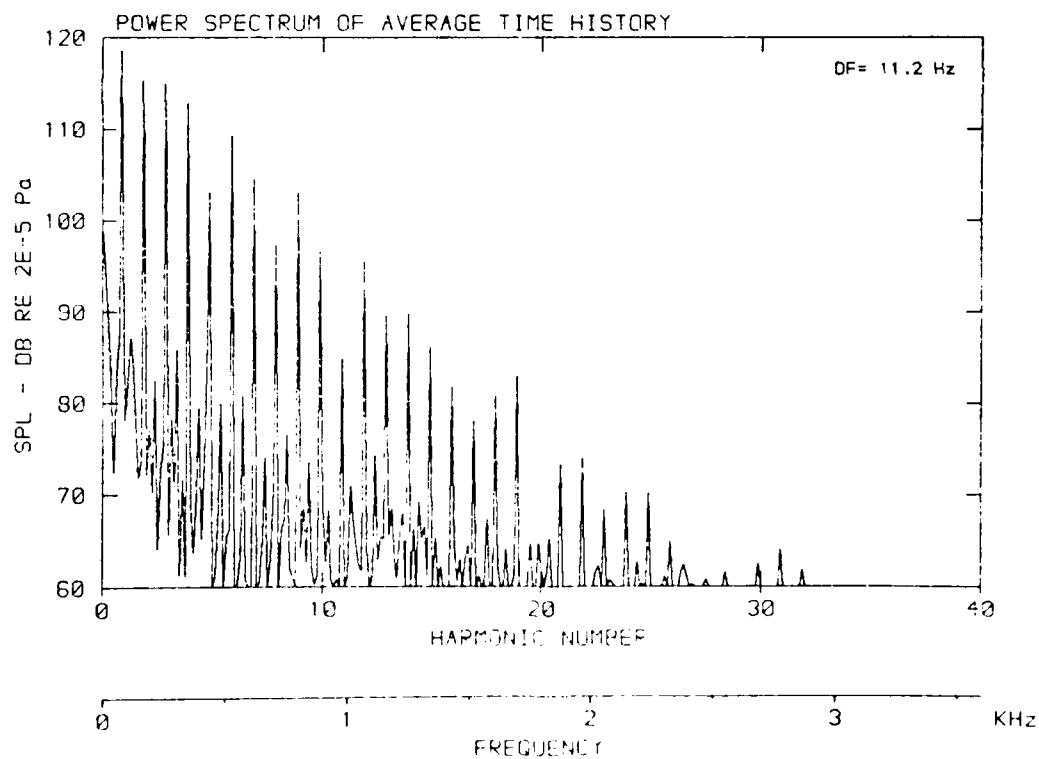
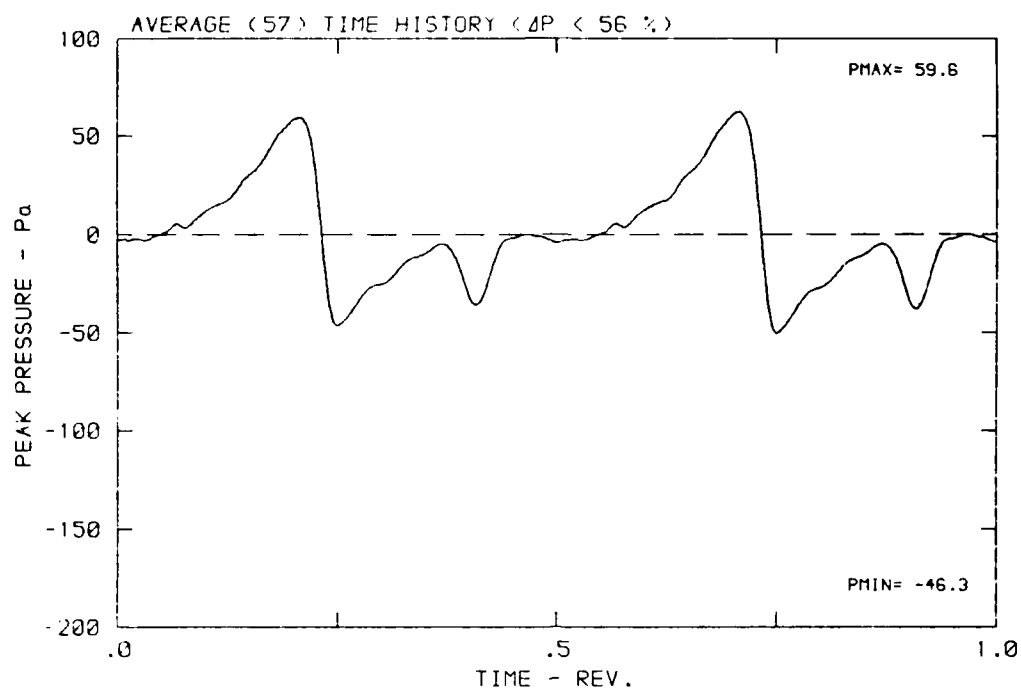
# DATA ACQUISITION SYSTEM (PHASE 1)

8: 19.1.17 14:45:12 (DATE) 14:45:12 (TIME) 001.000 (ID) 001.000 (ID)



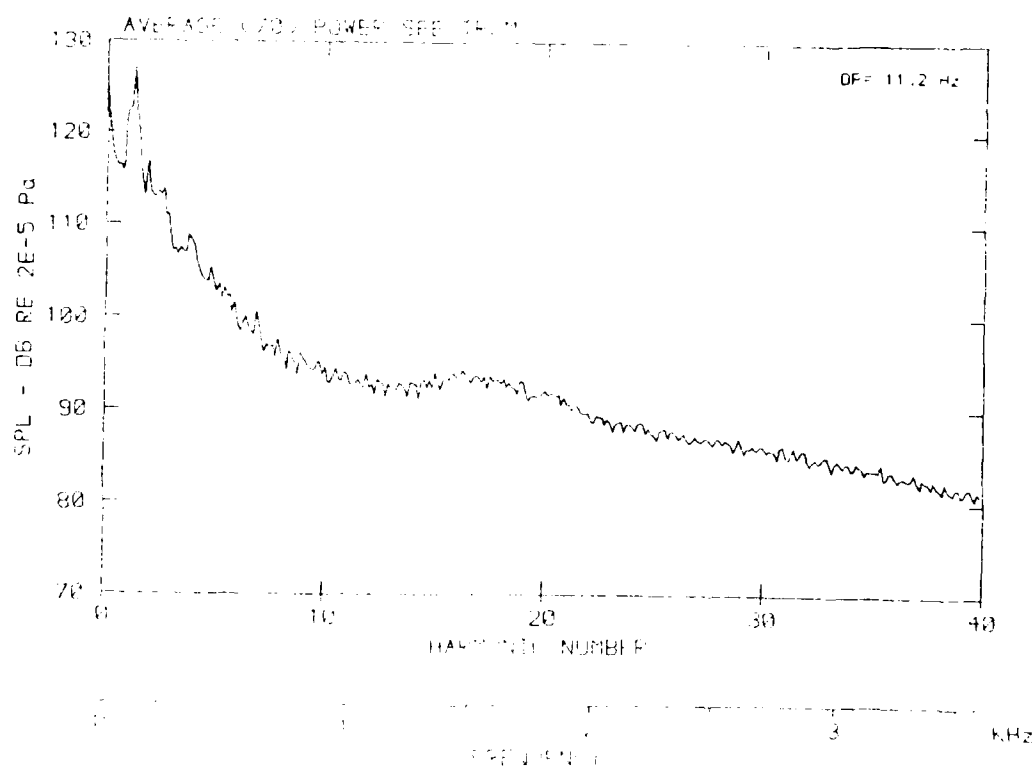
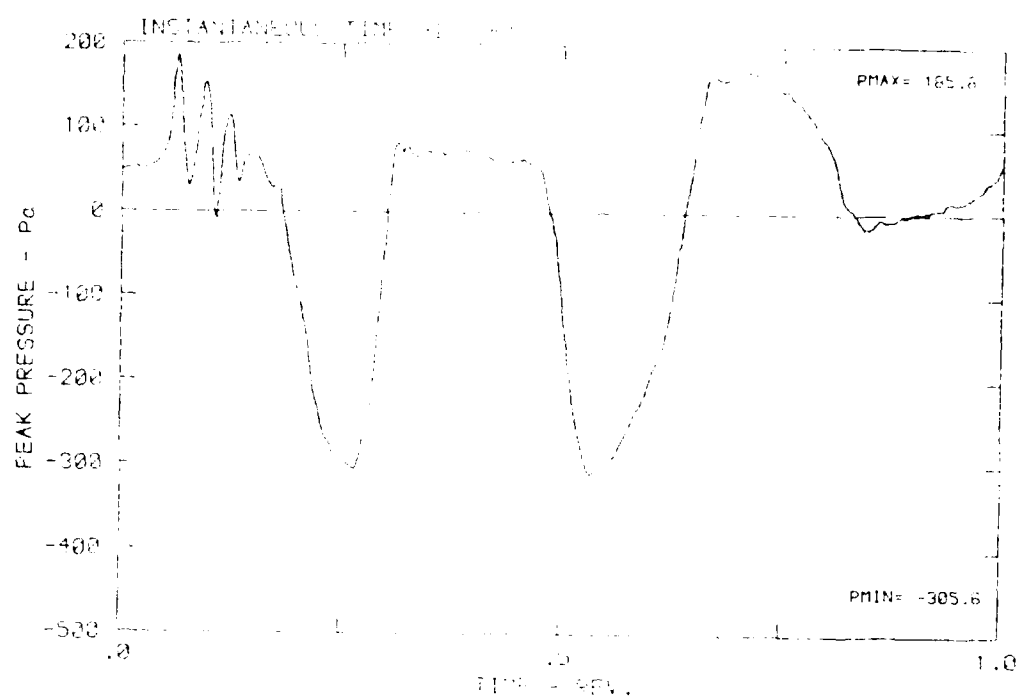
DATA POINT: FNC-3 RUN: 178 MP: 6

$\beta$ : 19.9° MH: .8740 n: 2700 rpm v/u: .269  $\phi$ : 3.6° T: 288.3 K



DATA POINTS END OF RUN 178 MP: 7

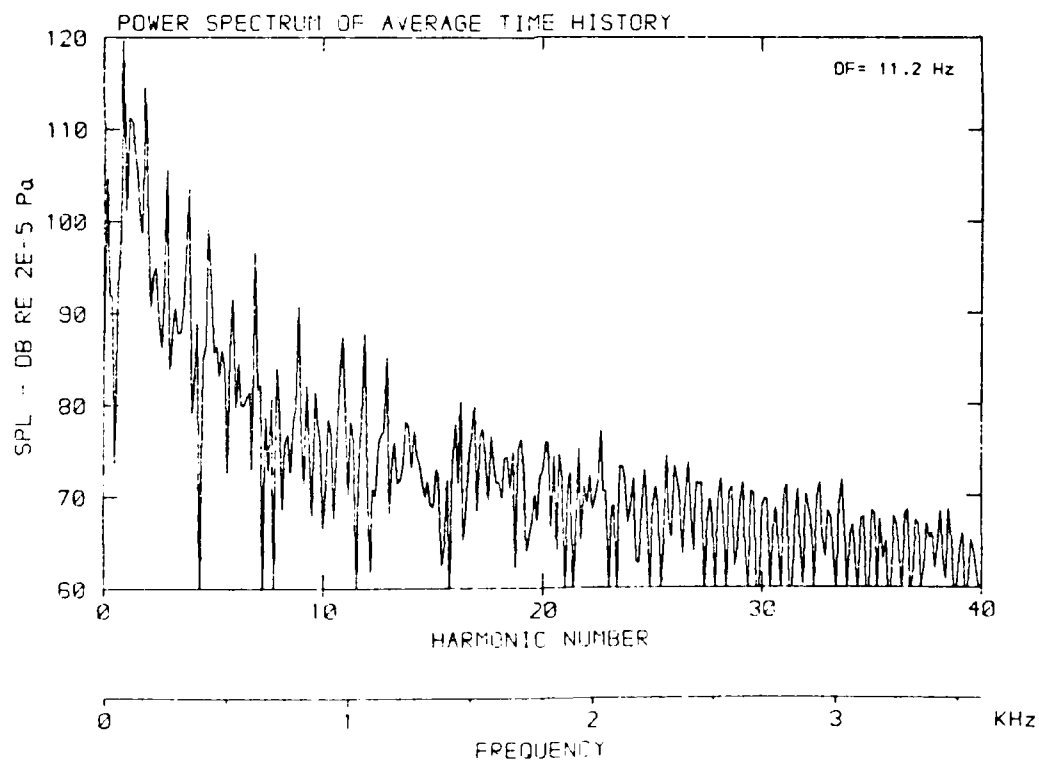
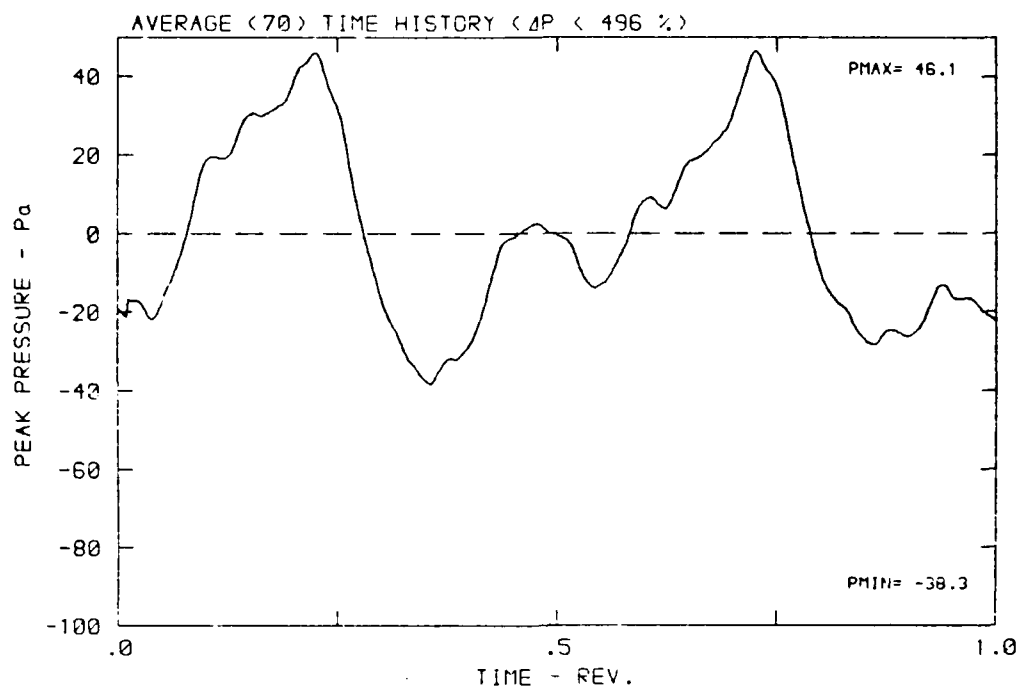
$\beta$ : 19.9° MP: .8740  $\alpha$ : 2.00  $\phi$ : 3.6°  $\gamma$ : .98.0





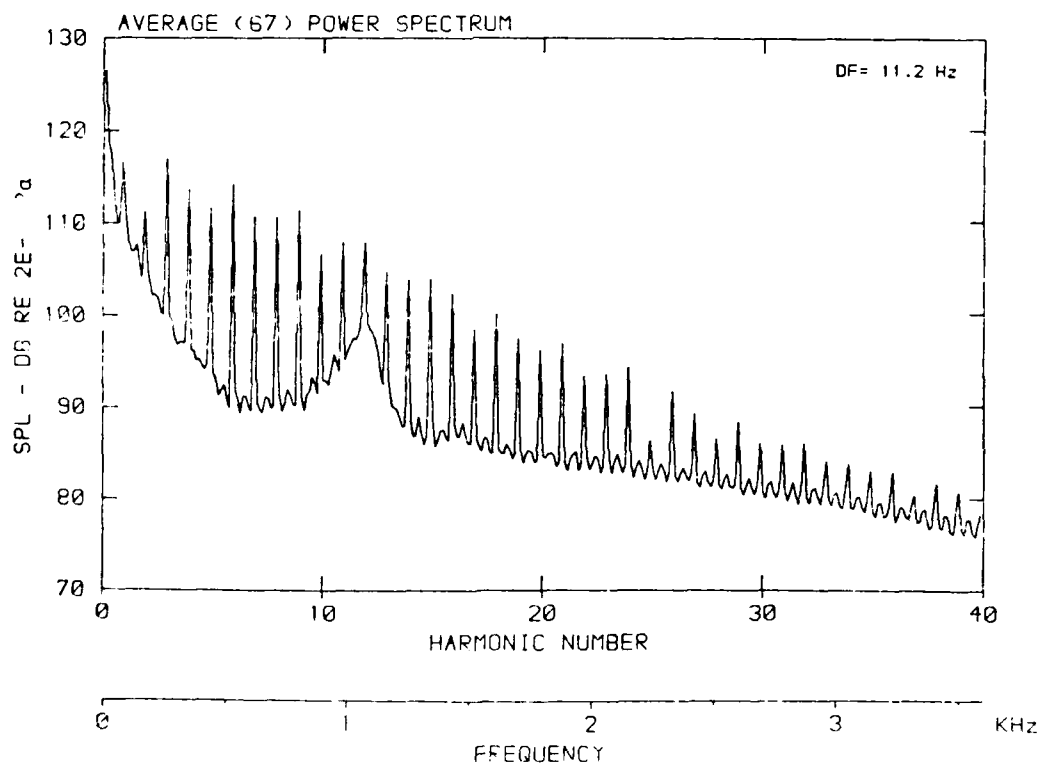
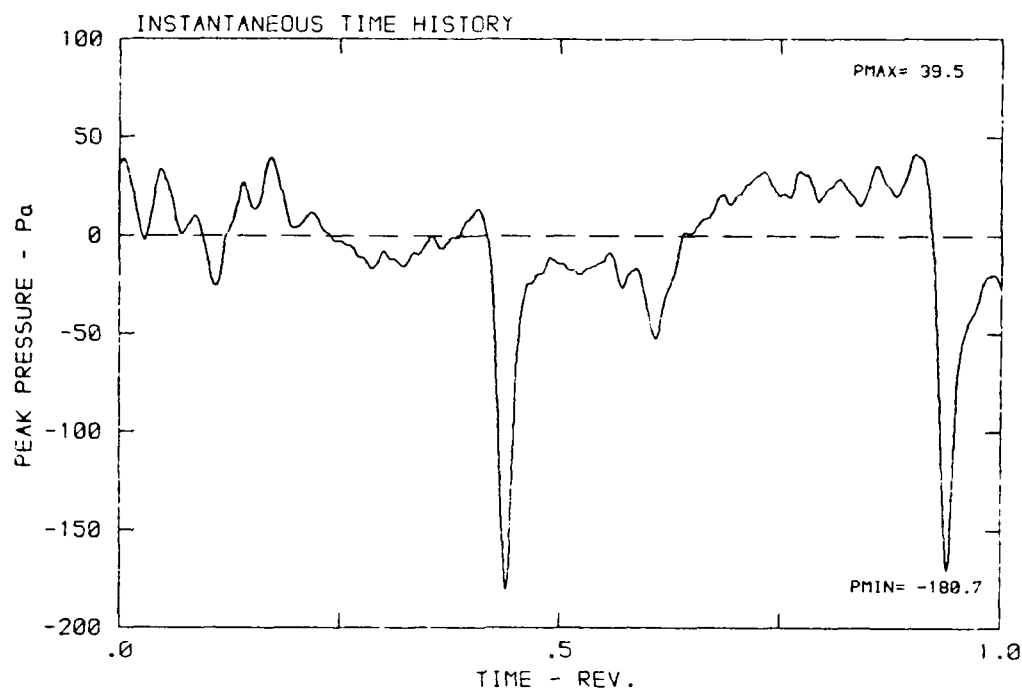
DATA POINT: FNC-3 RUN: 178 MP: 7

$\beta$ : 19.9° MH: .8740 n: 2700 rpm  $v/u$ : .269  $\phi$ : 3.6° T: 288.3 K



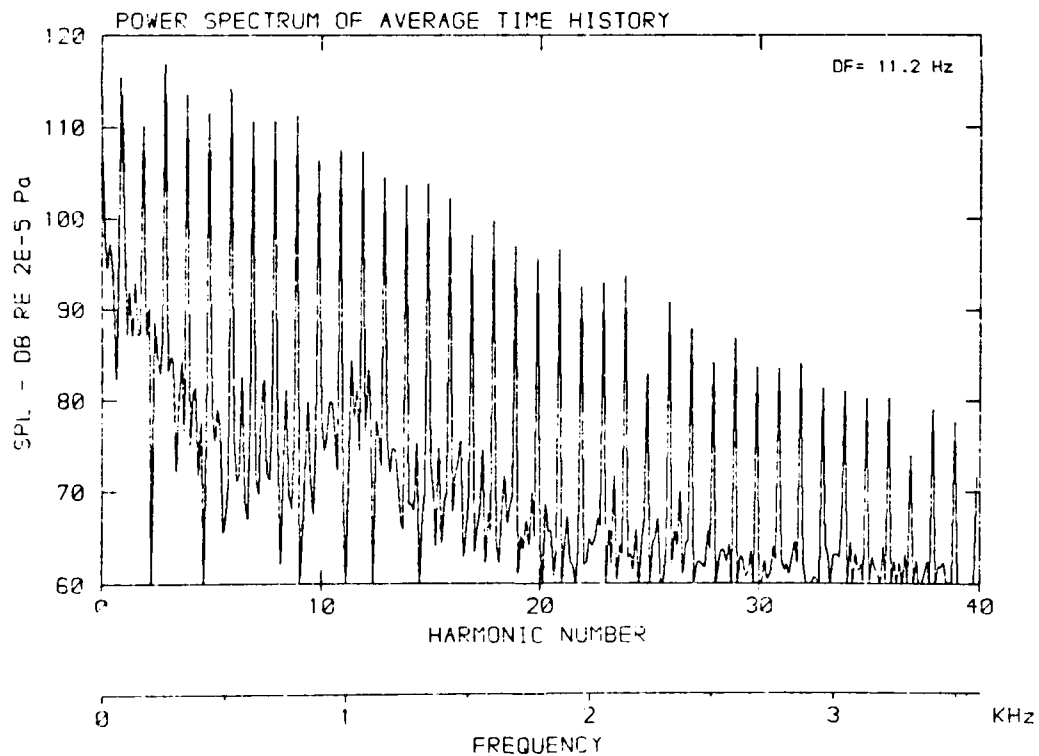
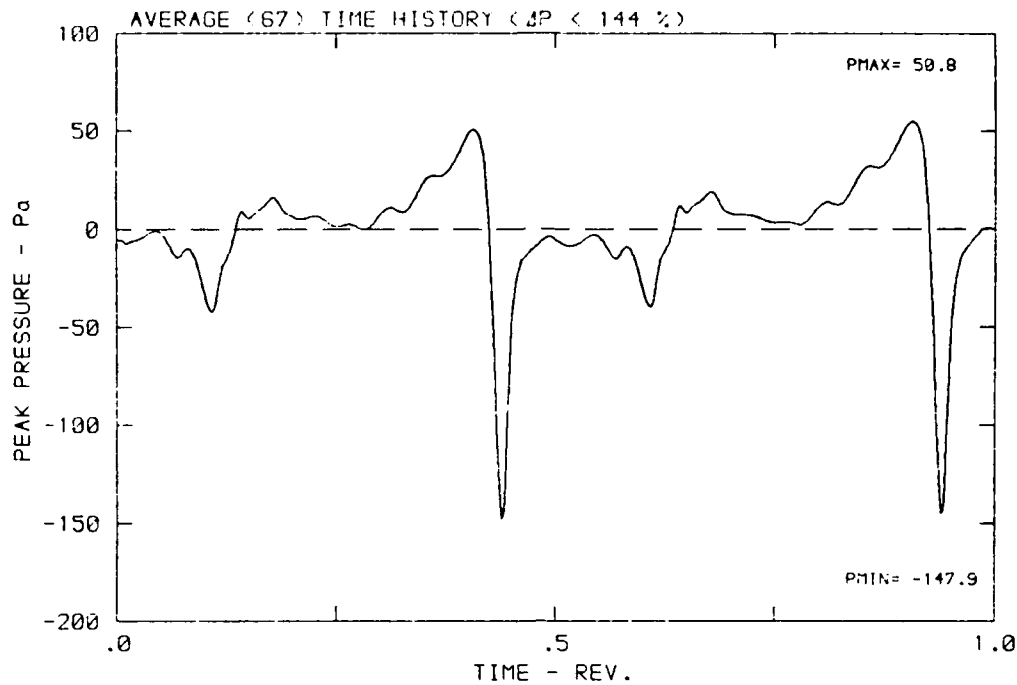
DATA POINT: FNC-3 RUN: 178 MP: 9

$\beta$ : 19.9° MH: .8740 n: 2700 rpm  $v/u$ : .269  $\phi$ : 3.6° T: 288.3 K



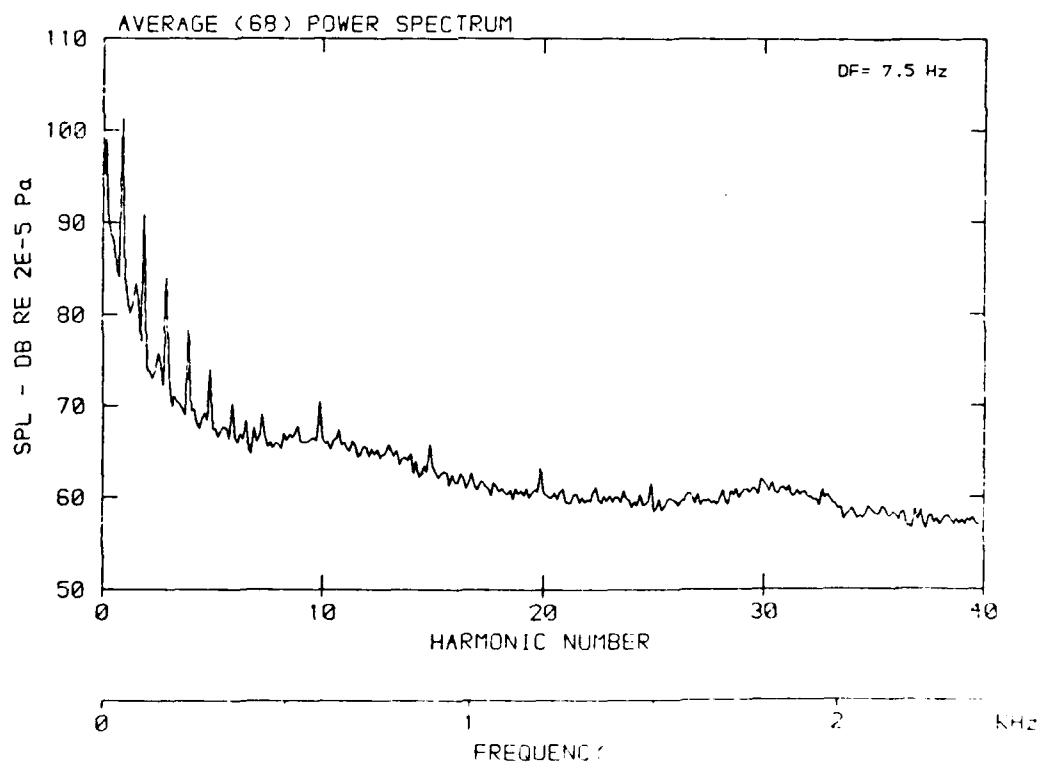
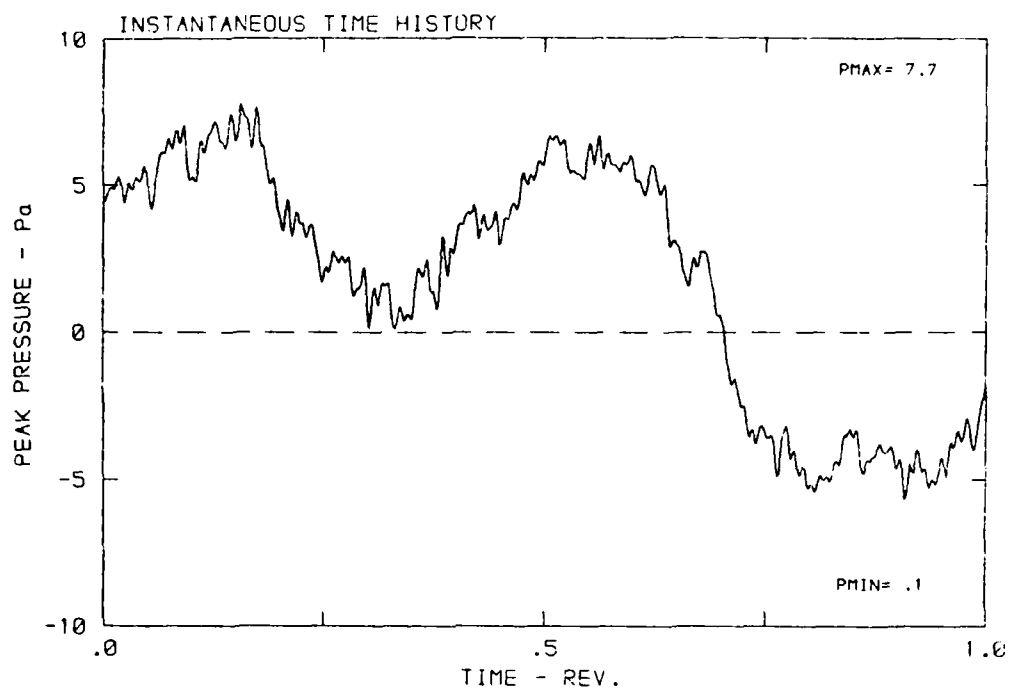
DATA POINT: FNC-3 RUN: 178 MP: 9

$\beta$ : 19.9° MH: .8740 n: 2700 rpm v/u: .269  $\phi$ : 3.6° T: 288.3 K



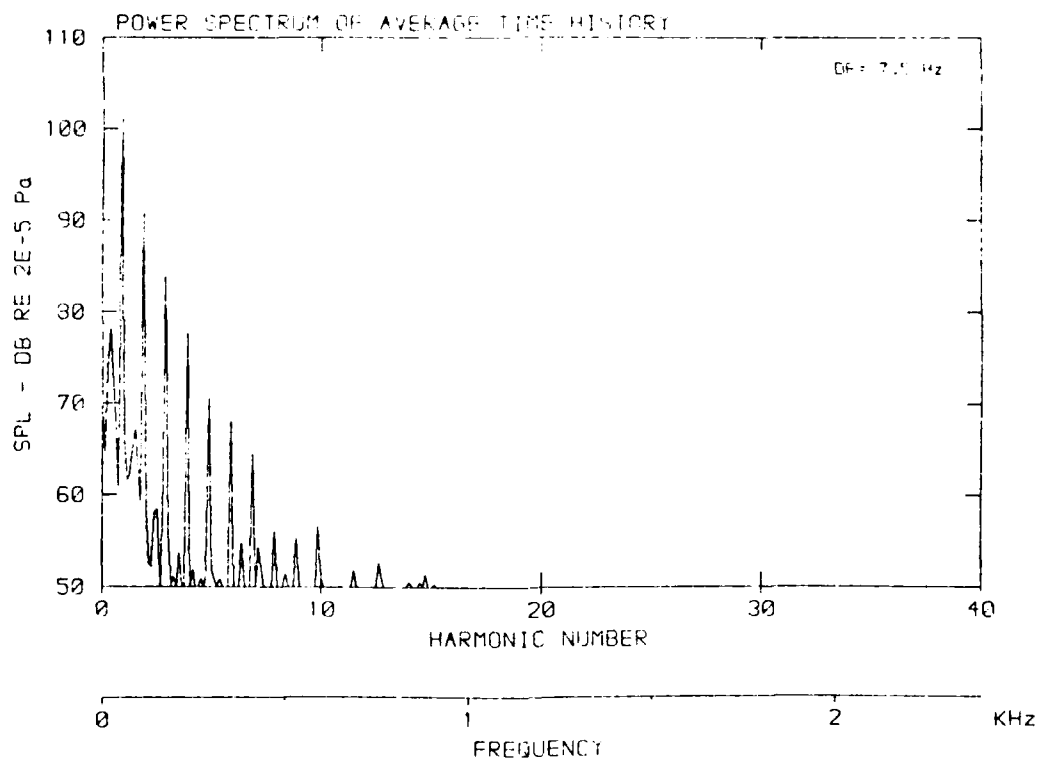
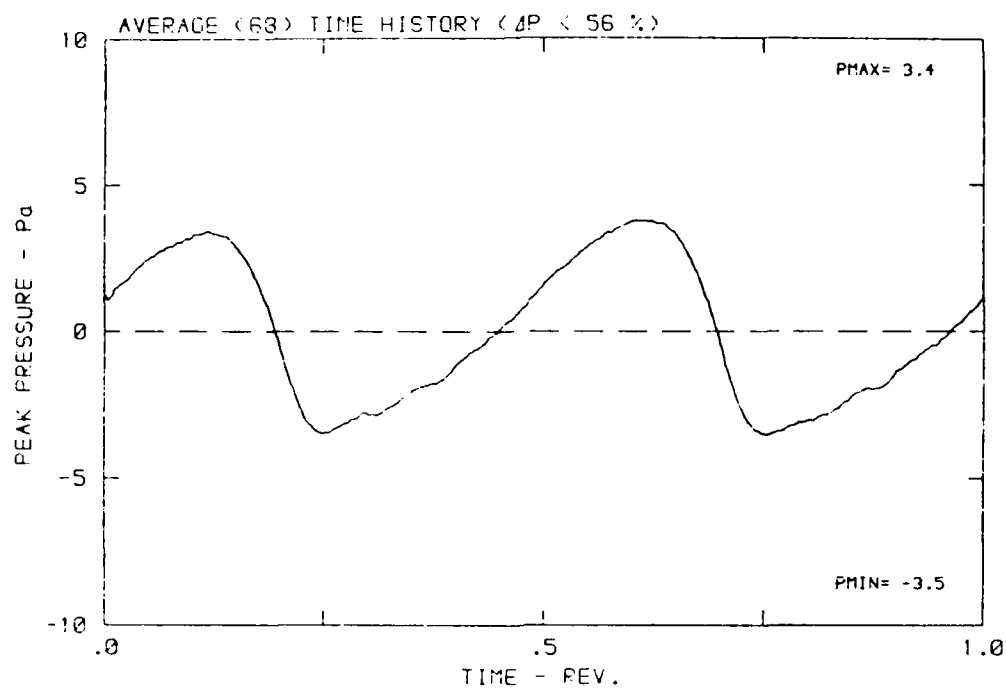
DATA POINT: FNC-4 RUN: 175 MP: 1

$\beta$ : 23.7° MH: .5835 n: 1800 rpm v/u: .268  $\phi$ : 3.5° T: 287.2 K



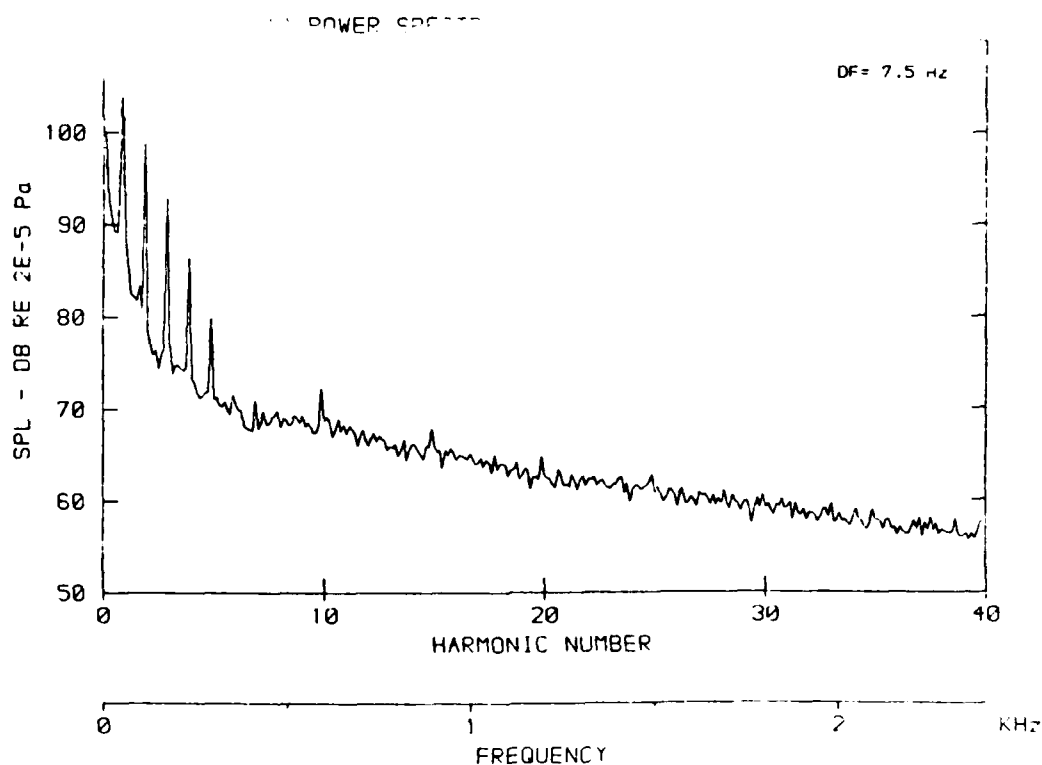
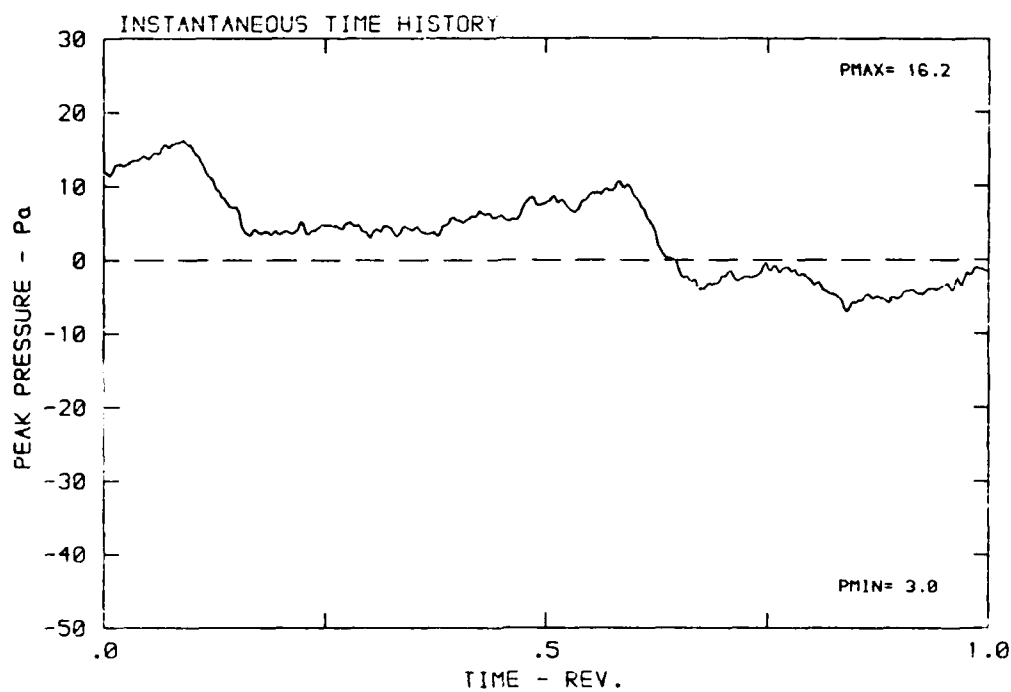
DATA POINT: FNC-4 RUN: 175 MP: 1

$\beta$ : 23.7° MH: .5835 n: 1800 rpm  $v/u$ : .268  $\phi$ : 3.6° T: 287.2 K



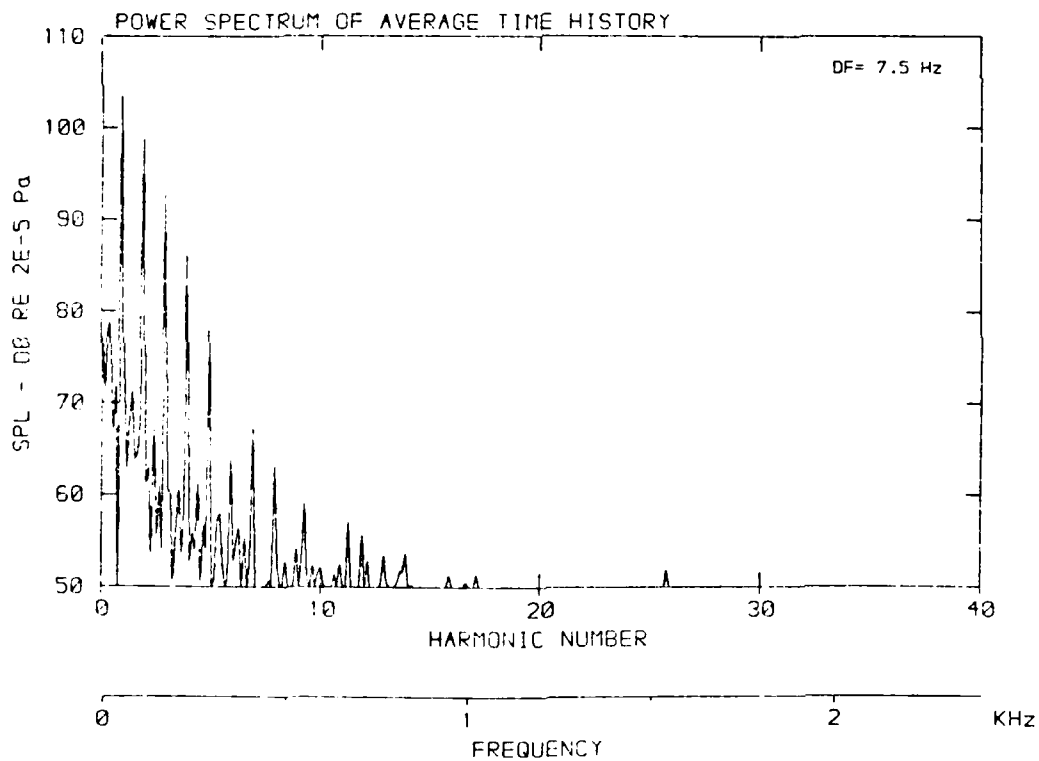
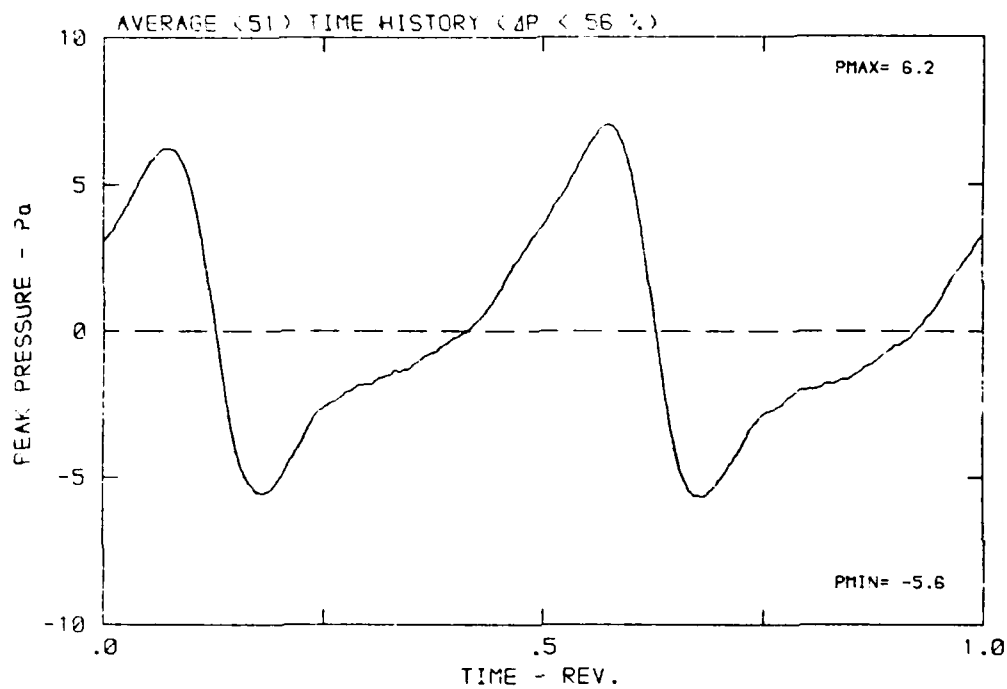
DATA POINT: FNC-4 RUN: 175 MP: 2

$\beta$ : 23.7° MH: .5835 n: 1800 rpm v/u: .268  $\phi$ : 3.6° T: 287.2 K



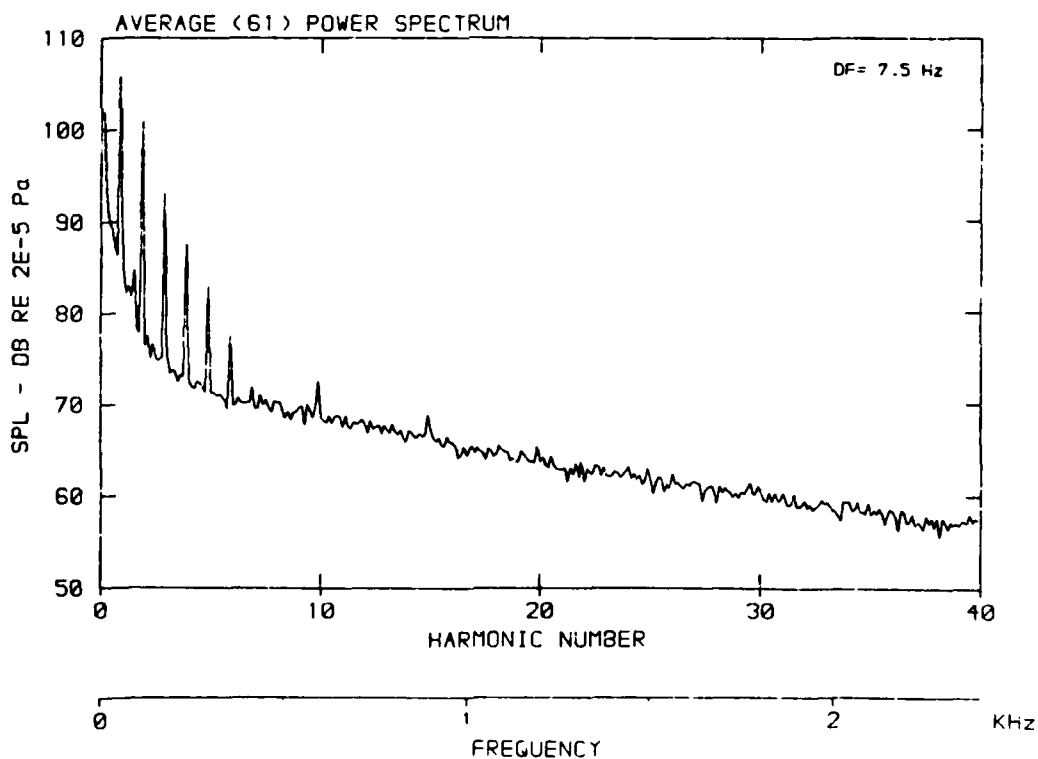
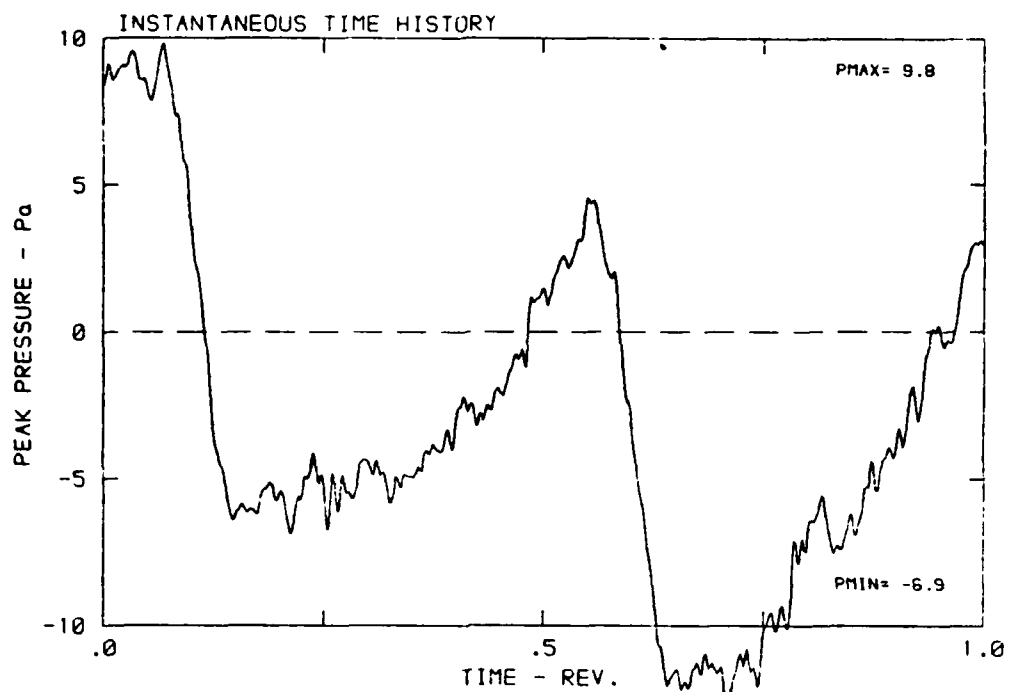
DATA POINT: FNC-4 RUN: 175 MP: 2

$\beta$ : 23.7° MH: .5835 n: 1800 rpm  $v/u$ : .268  $\phi$ : 3.6° T: 287.2 K



DATA POINT: FNC-4 RUN: 175 MP: 3

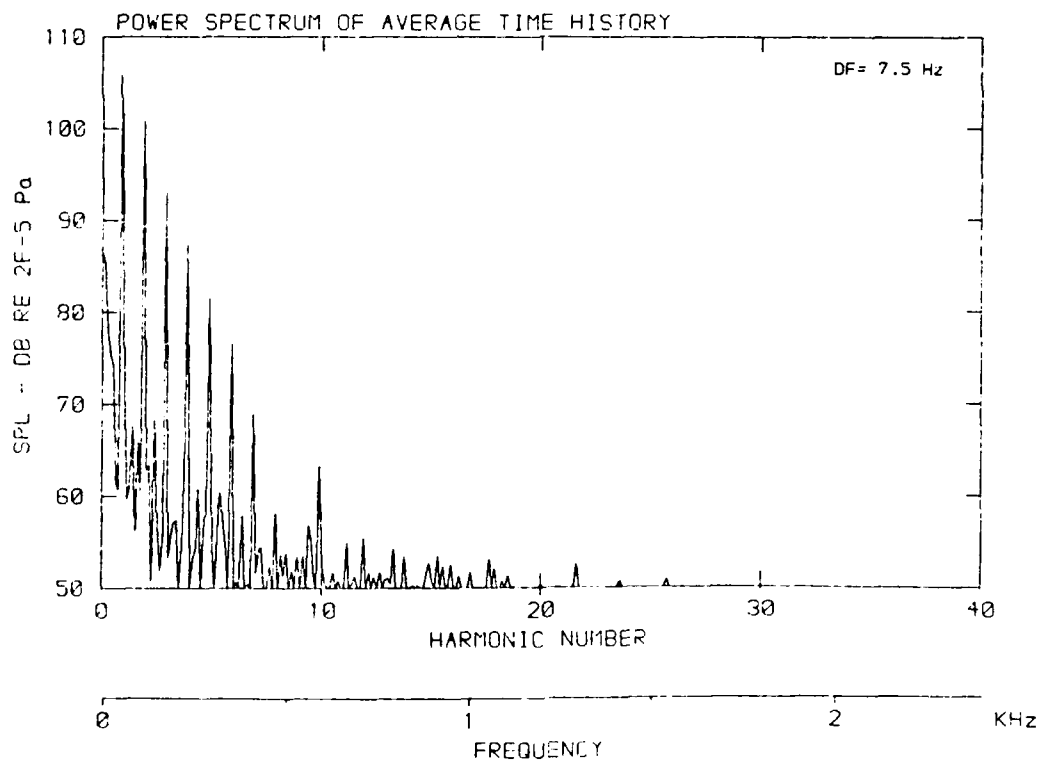
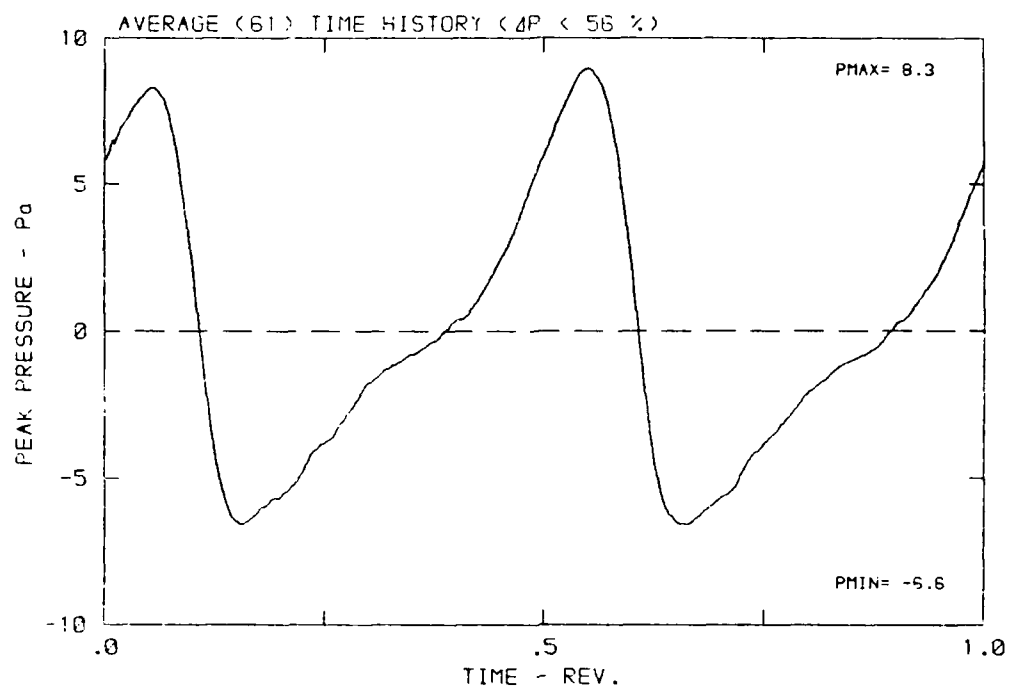
$\beta$ : 23.7° MH: .5835 n: 1800 rpm v/u: .268  $\phi$ : 3.6° T: 287.2 K





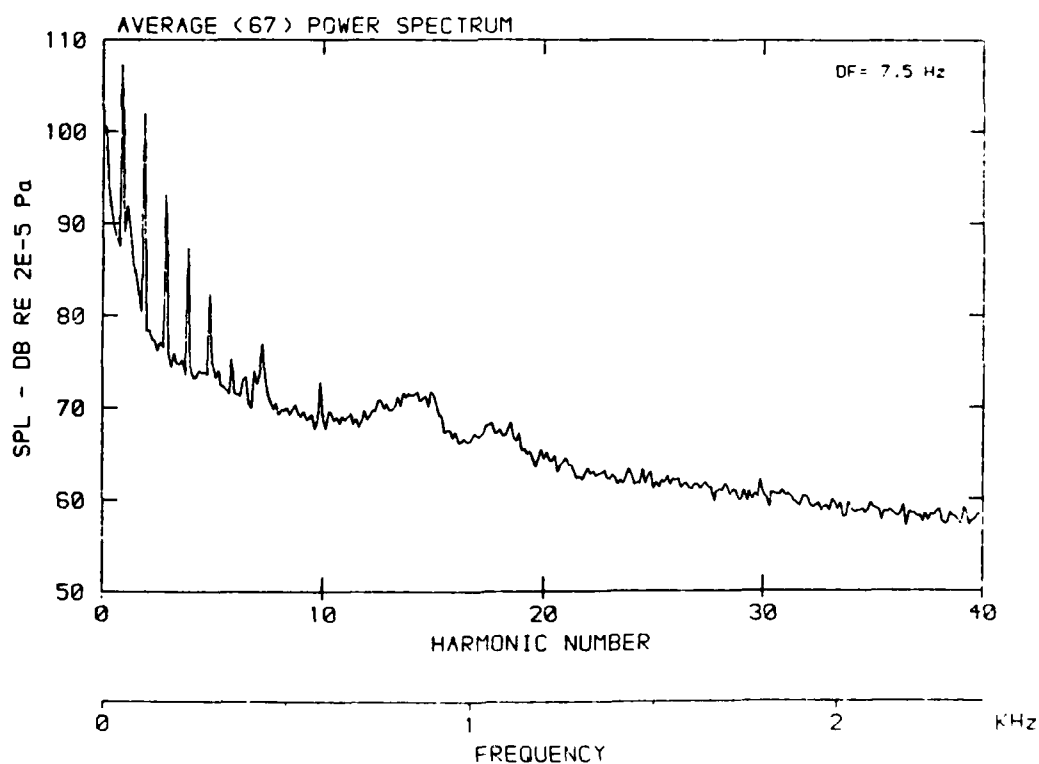
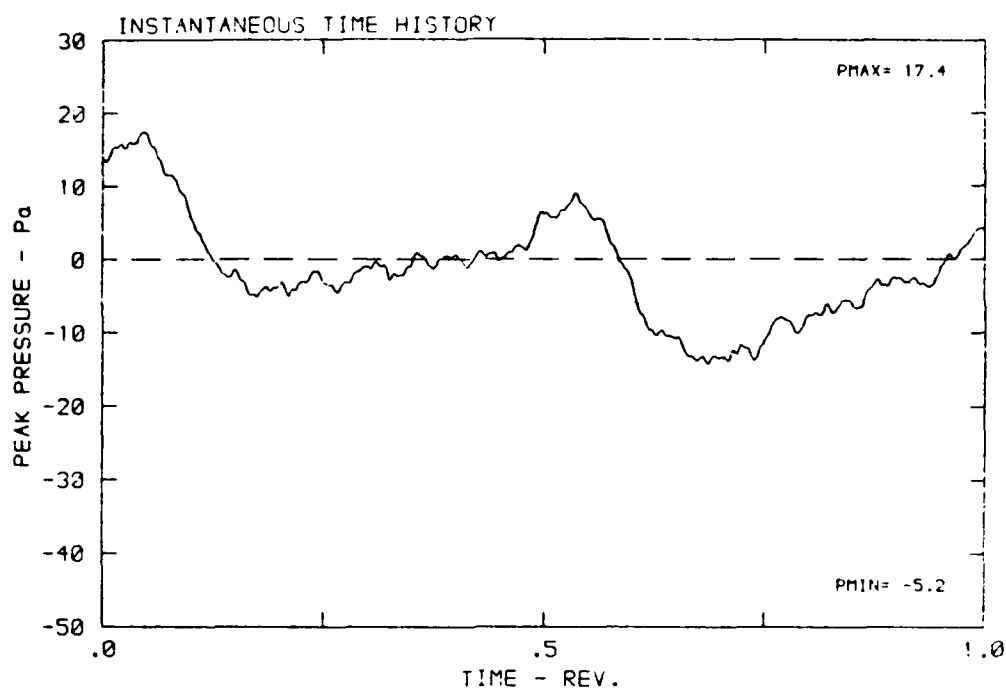
DATA POINT: FNC-4 RUN: 175 MP: 3

$\beta$ : 23.7° MH: .5835 n: 1800 rpm  $v/u$ : .268  $\phi$ : 3.6° T: 287.2 K



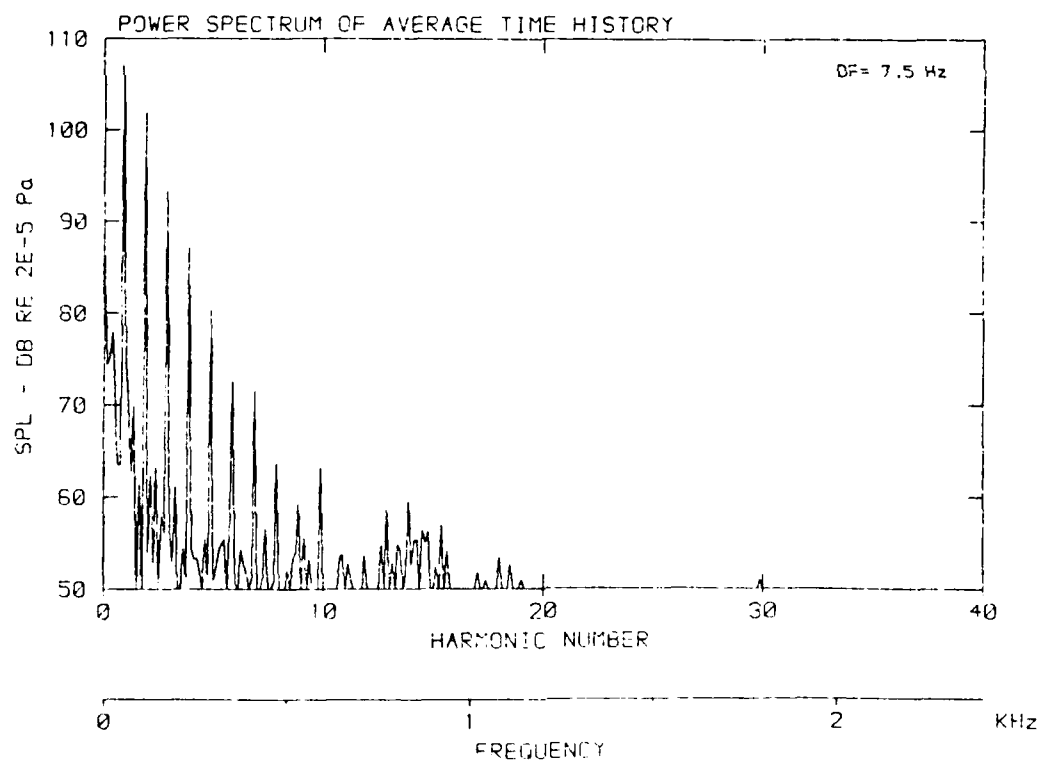
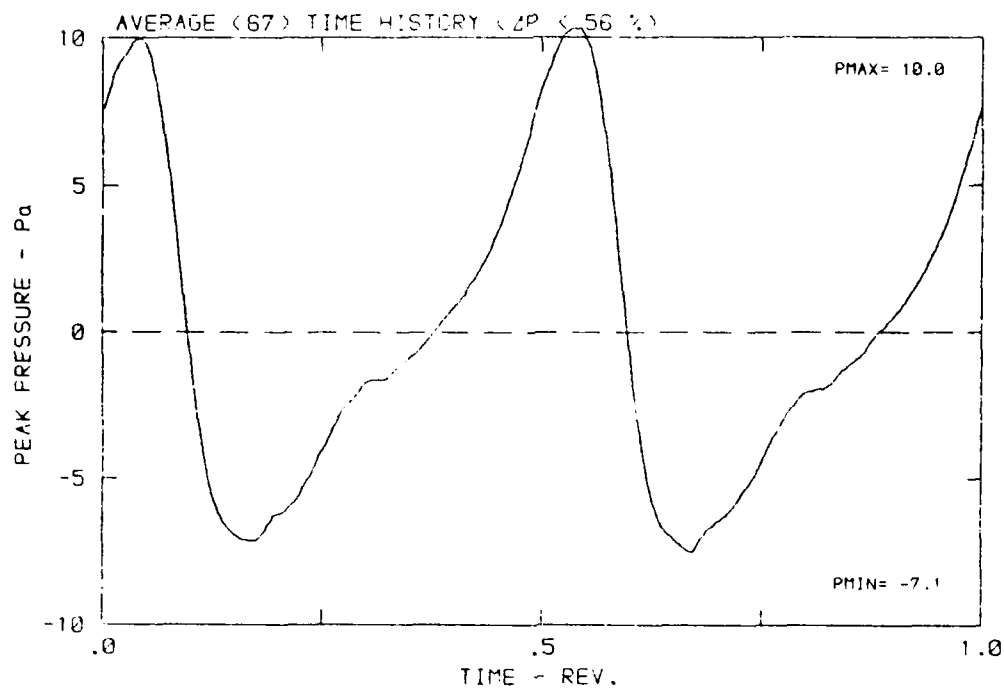
DATA POINT: FNC-4 RUN: 175 MP: 4

$\beta$ : 23.7° MH: .5835 n: 1800 rpm  $v/u$ : .263  $\phi$ : 3.6° T: 287.2 K



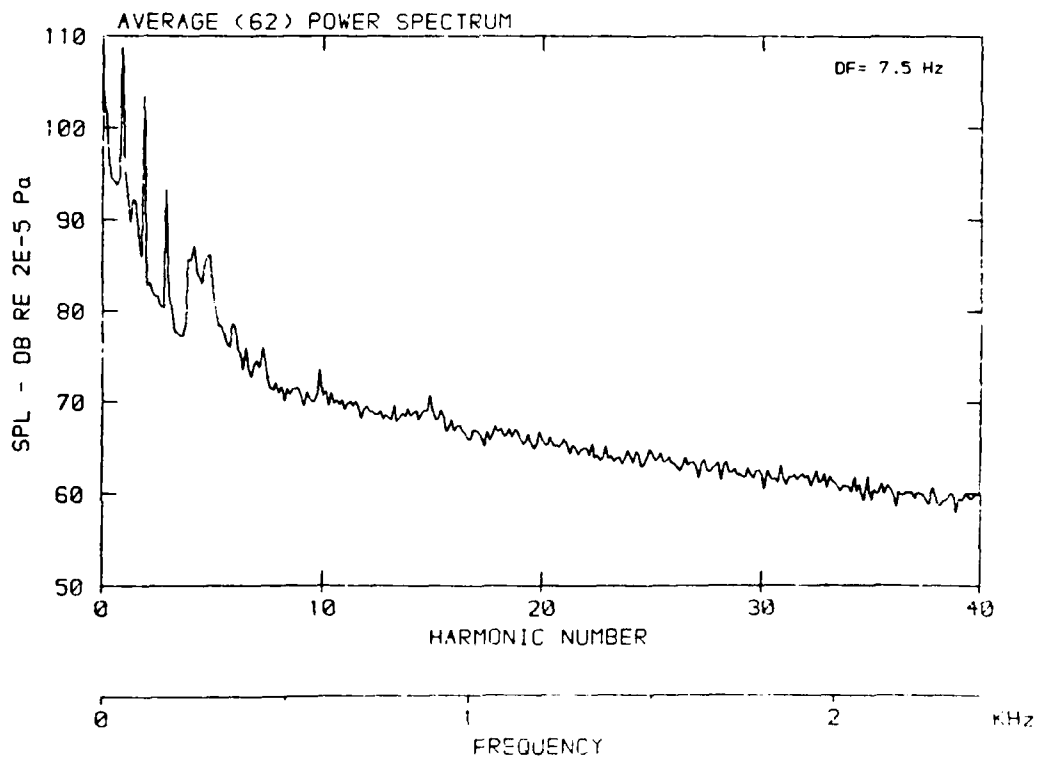
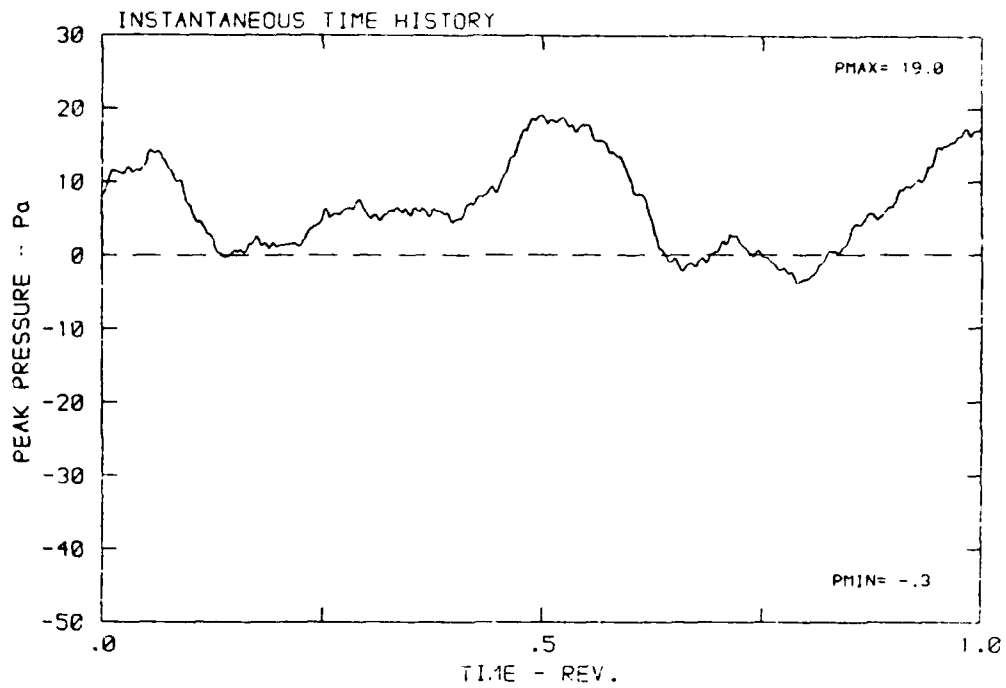
DATA POINT: FNC-4 RUN: 175 MP: 4

$\beta$ : 23.7° MH: .5835 n: 1500 rpm  $v/u$ : .268  $\phi$ : 3.6° T: 287.2 K



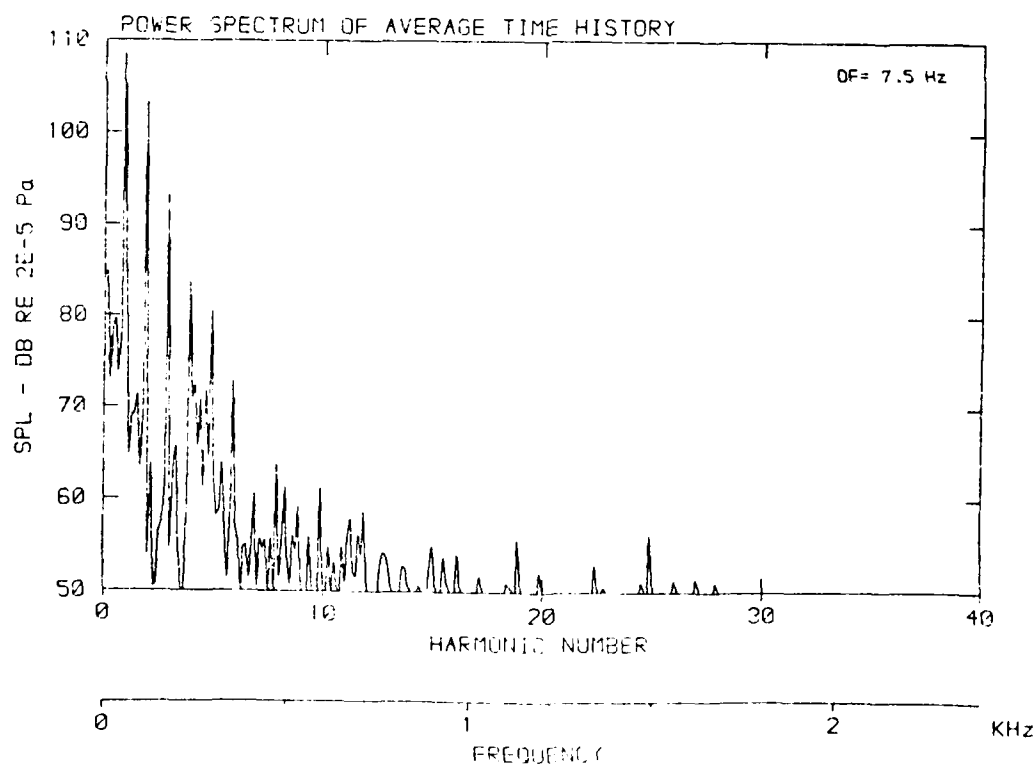
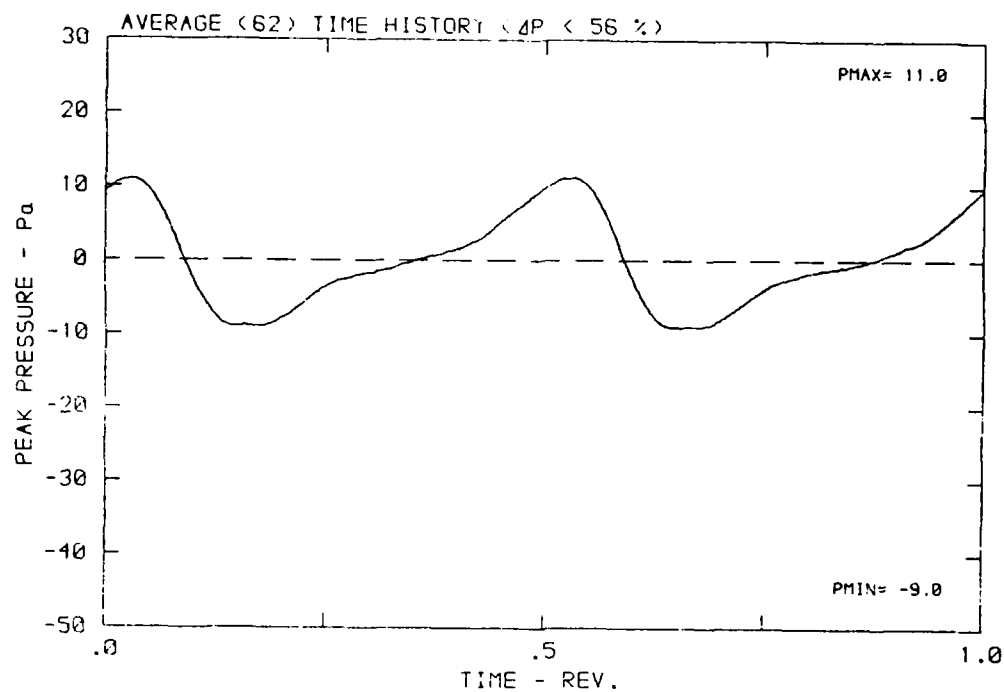
DATA POINT: FNC-4 RUN: 175 MP: 5

$\beta$ : 23.7° MH: .5835 n: 1800 rpm  $v/u$ : .268  $\phi$ : 3.6° T: 297.2 K



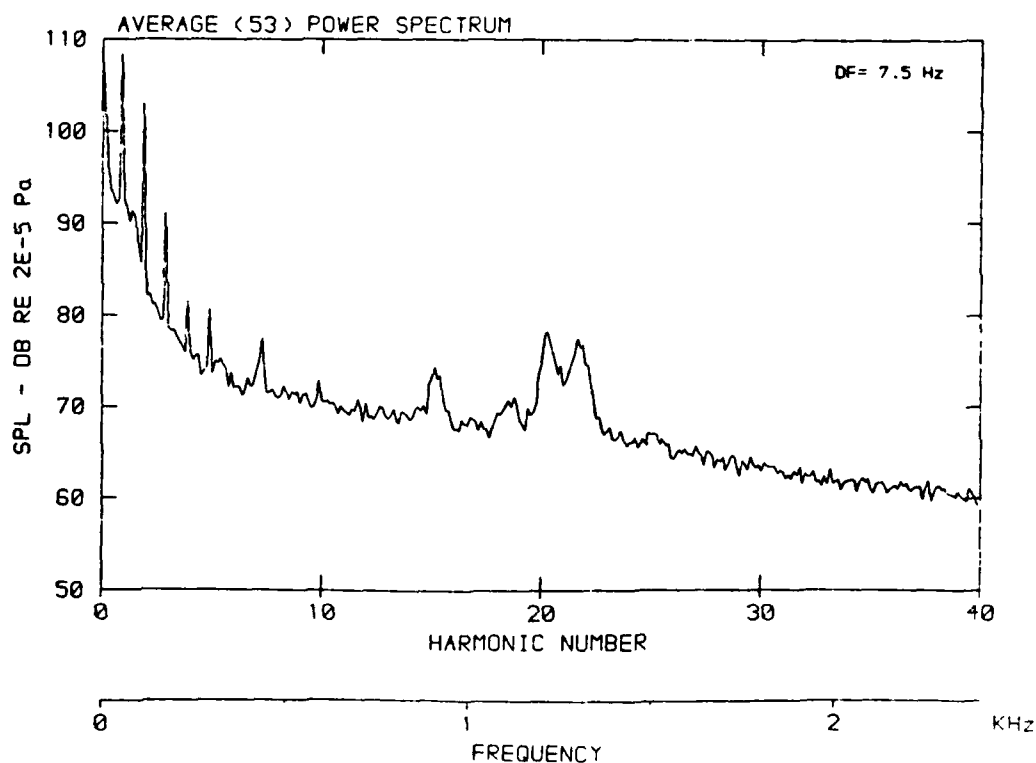
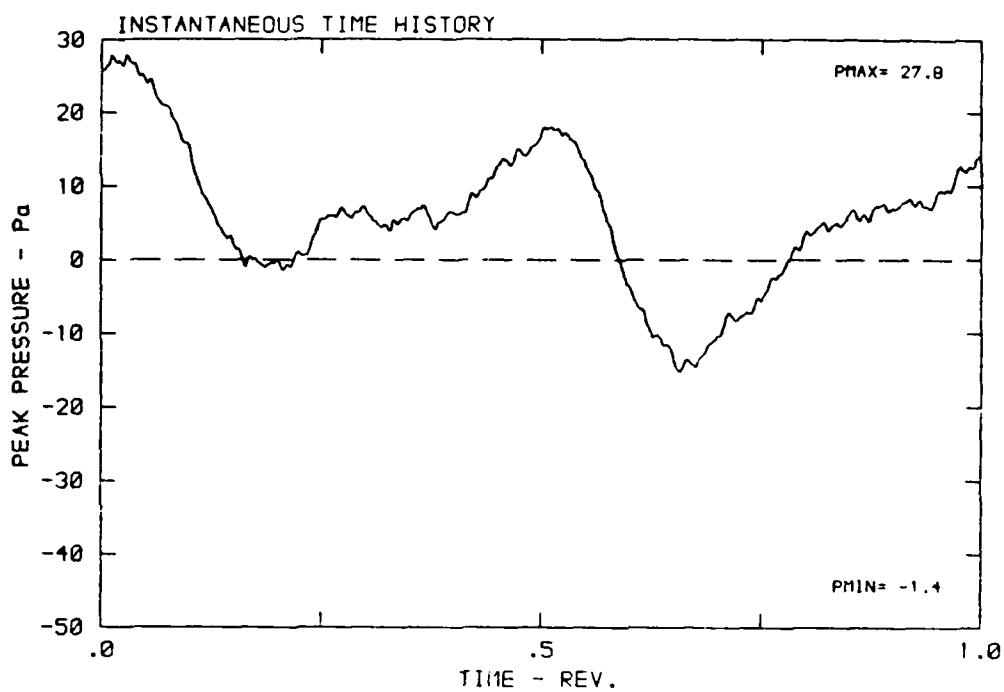
DATA POINT: FNC-4 RUN: 175 MP: 5

$\beta$ : 23.7° MH: .5835 n: 1800 rpm v/u: .268  $\phi$ : 3.6° T: 287.2 K



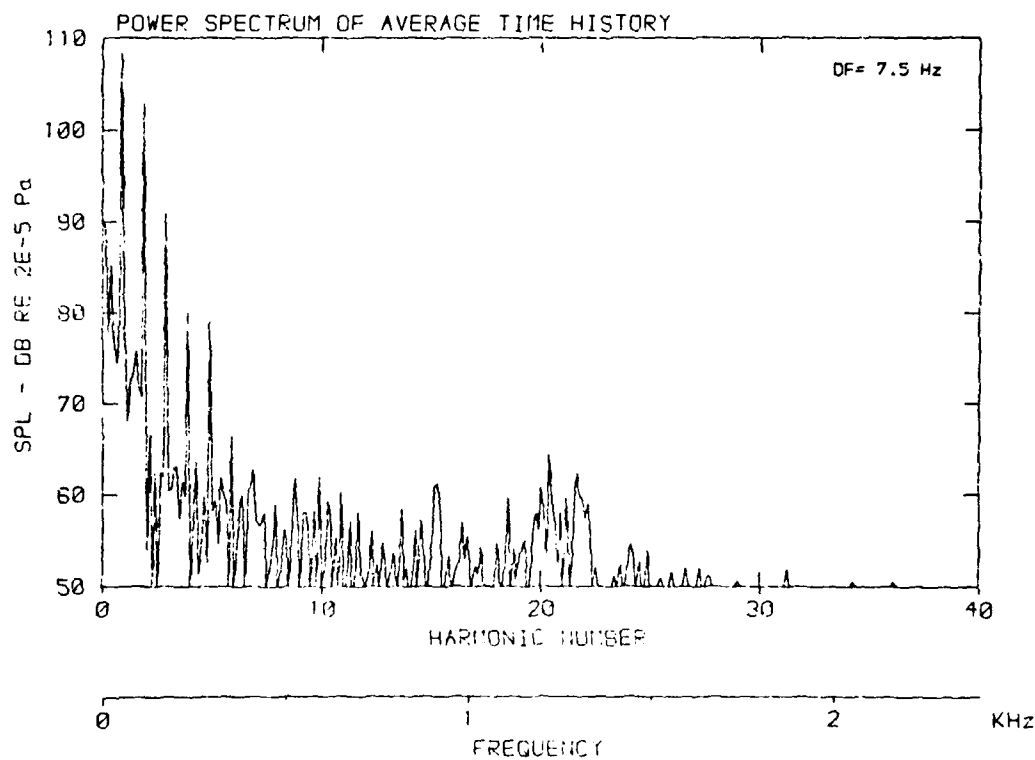
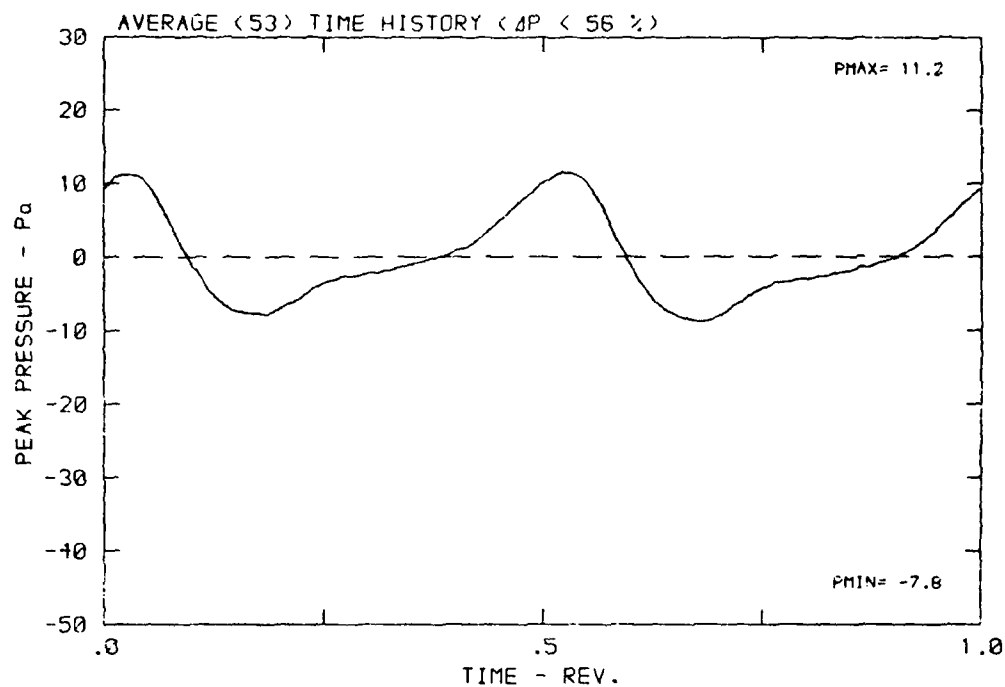
DATA POINT: FNC-4 RUN: 175 MP: 6

$\beta$ : 23.7° MH: .5835 n: 1800 rpm  $v/u$ : .268  $\phi$ : 3.6° T: 287.2 K



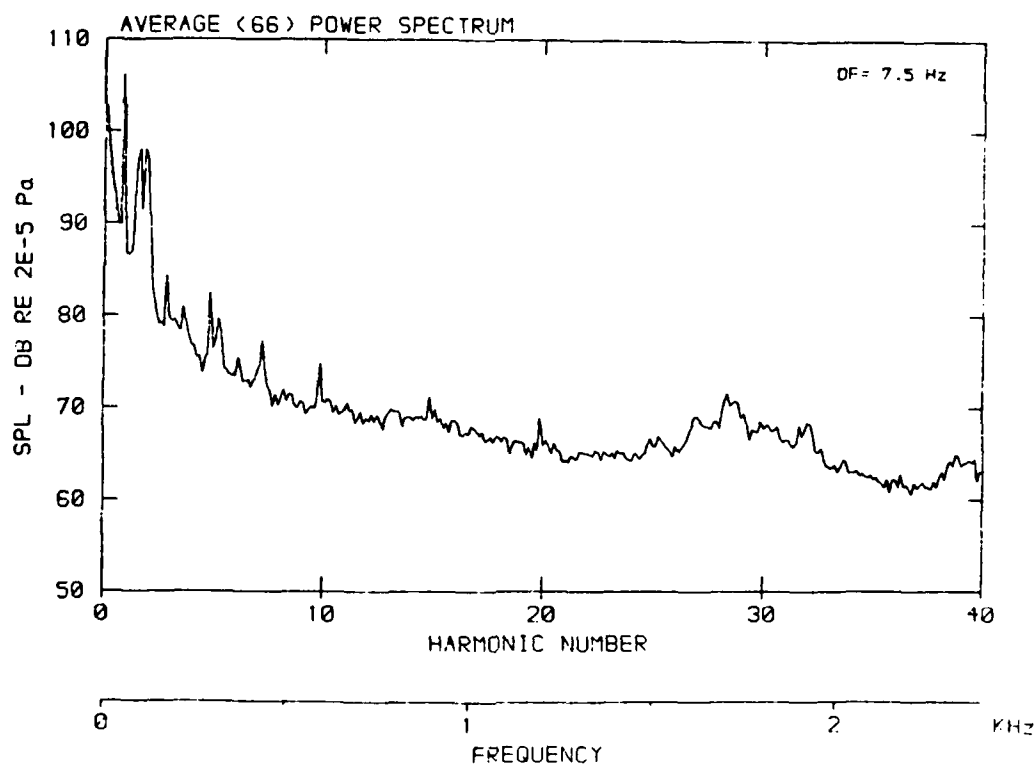
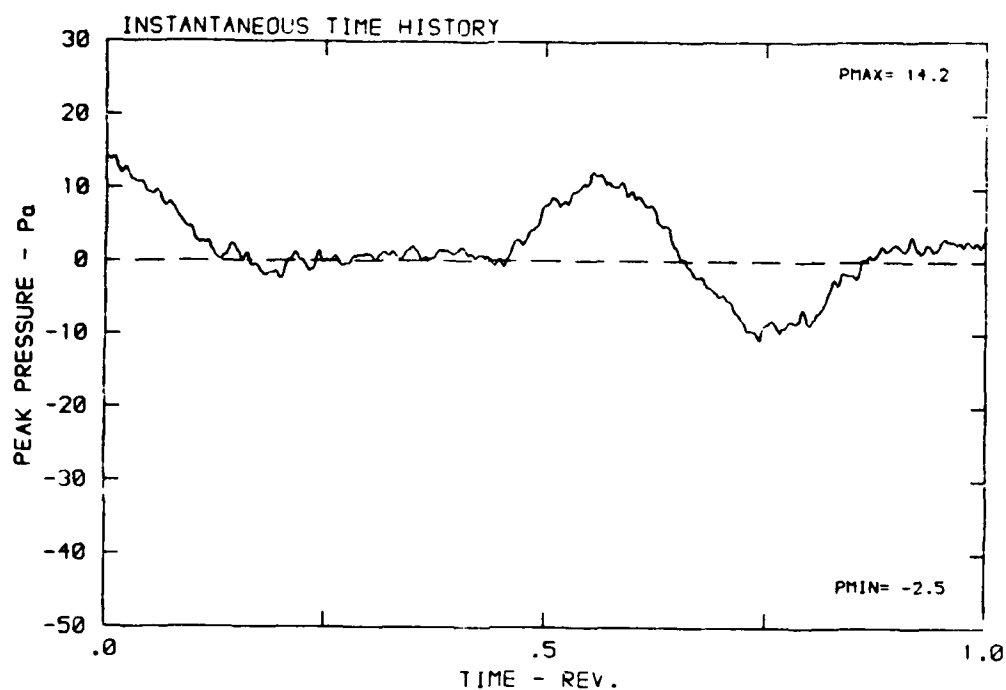
DATA POINT: FNC-4 RUN: 175 MP: 6

$\beta$ : 23.7° MH: .5835 n: 1800 rpm v/u: .268  $\phi$ : 3.6° T: 287.2 K



DATA POINT: FNC-4 RUN: 175 MP: 7

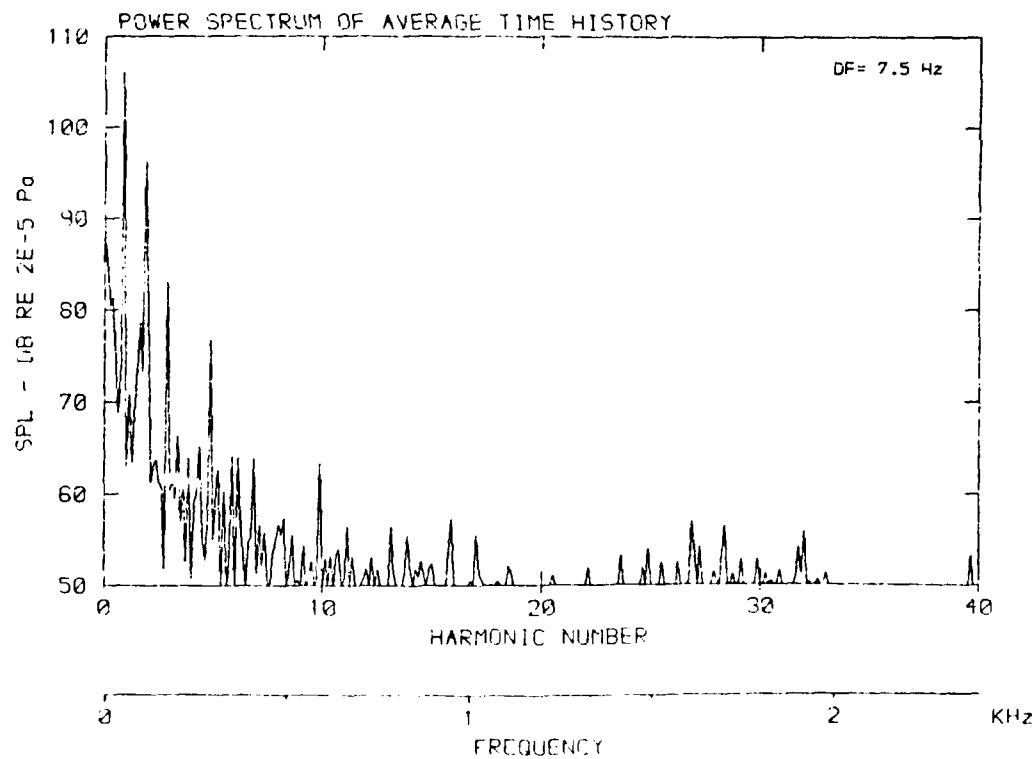
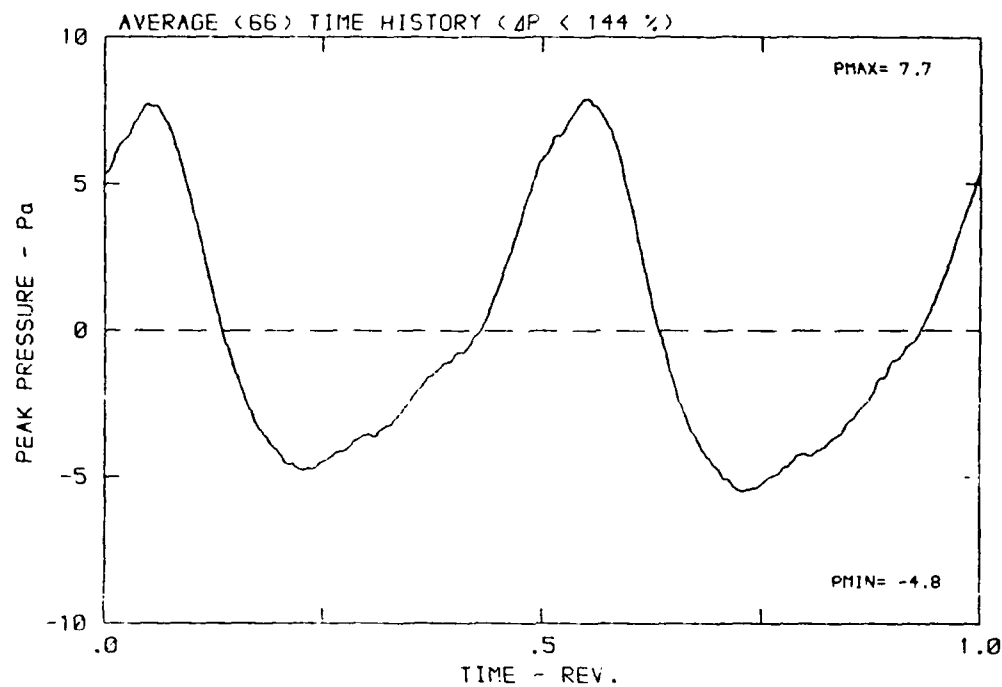
$\beta$ : 23.7° MH: .5835 n: 1800 rpm  $v/u$ : .268  $\phi$ : 3.6° T: 287.2 K





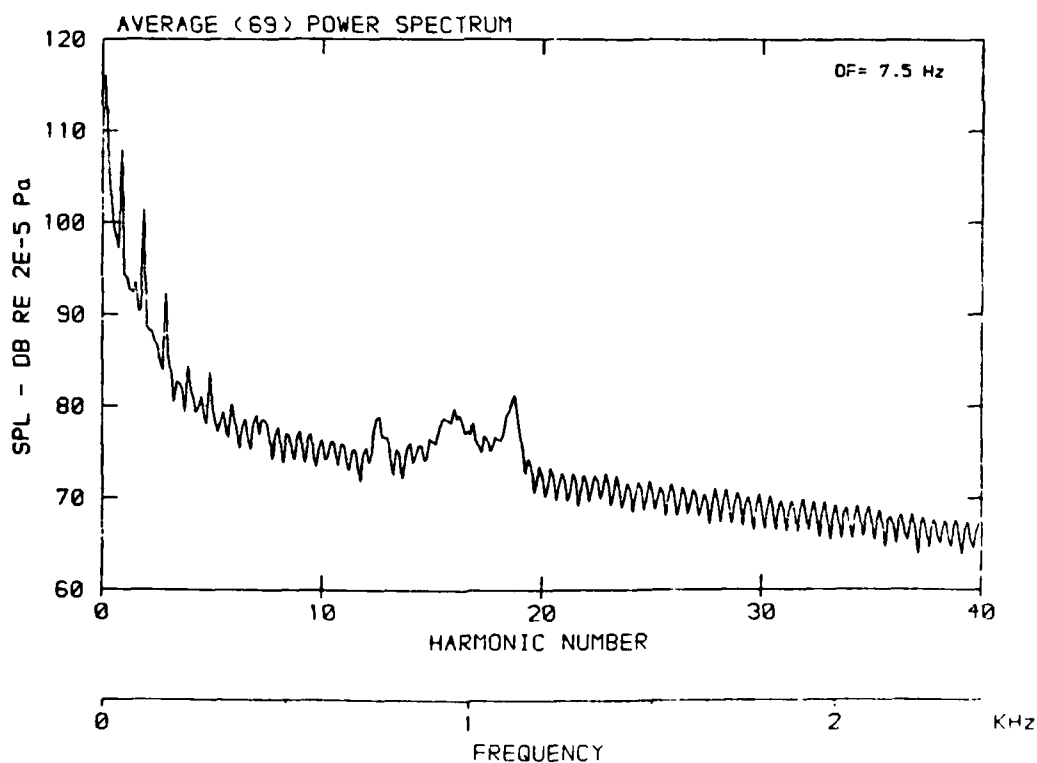
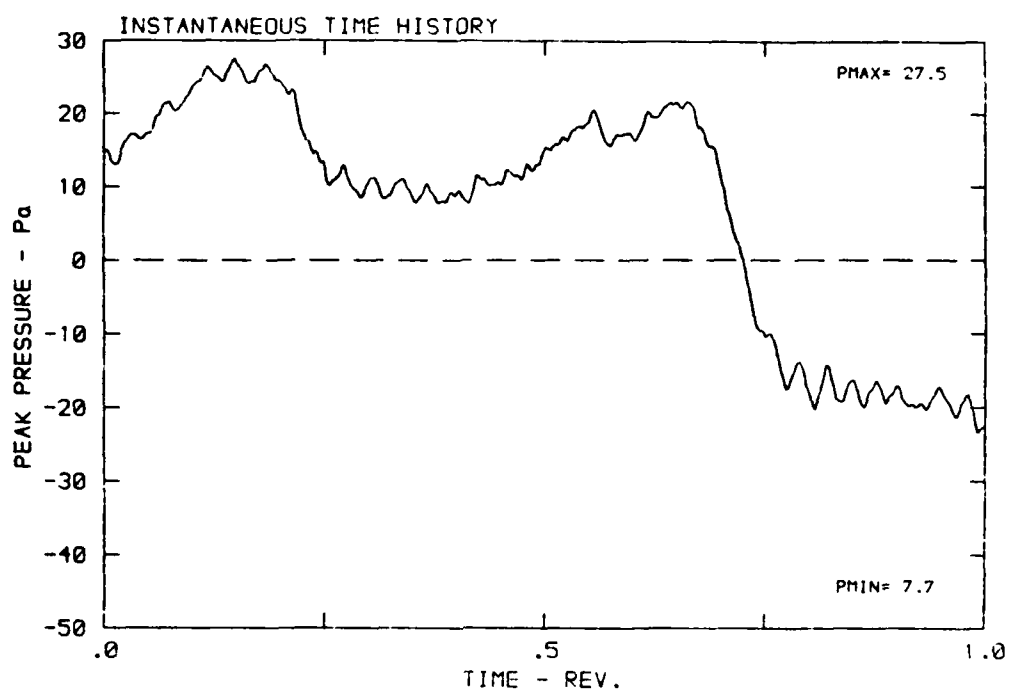
DATA POINT: FNC-4 RUN: 175 MP: 7

$\beta$ : 23.7° MH: .5835 n: 1800 rpm  $v/u$ : .268  $\phi$ : 3.6° T: 287.2 K



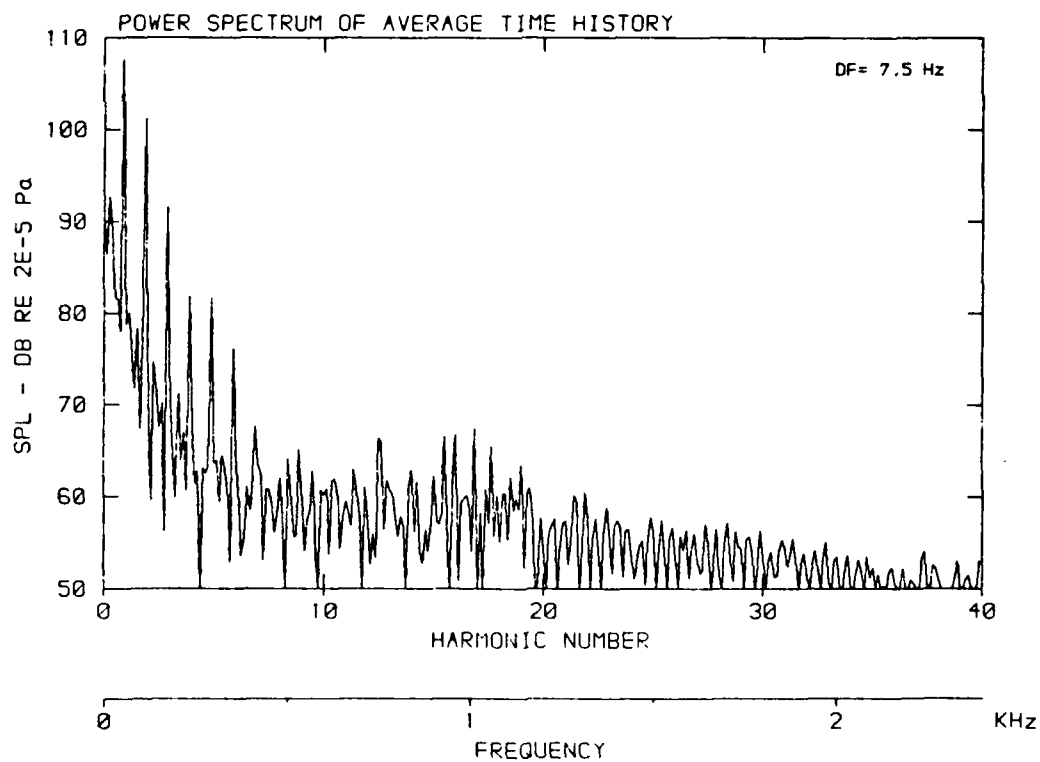
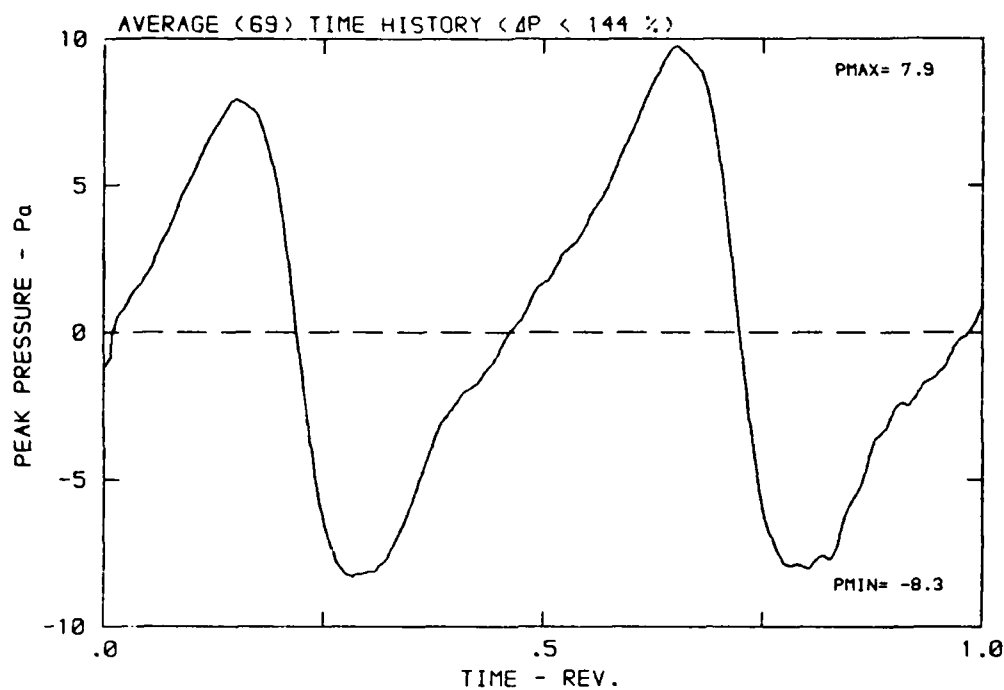
DATA POINT: FNC-4 RUN: 175 MP: 9

$\beta$ : 23.7° MH: .5835 n: 1800 rpm v/u: .268  $\phi$ : 3.6° T: 287.2 K



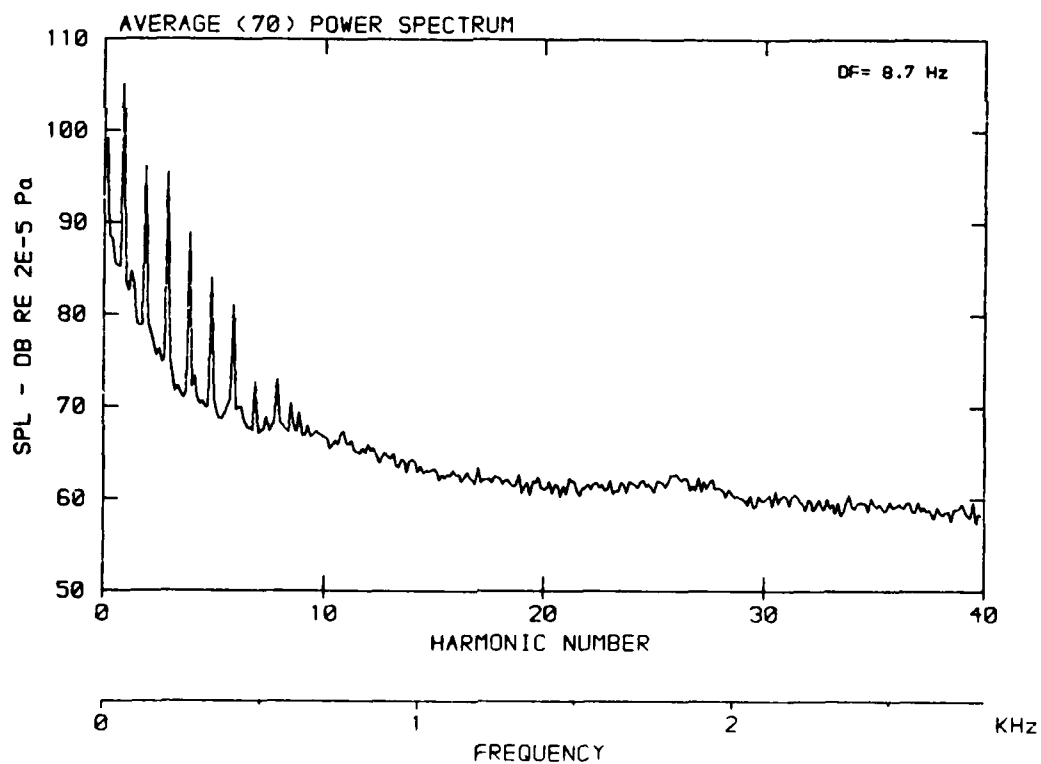
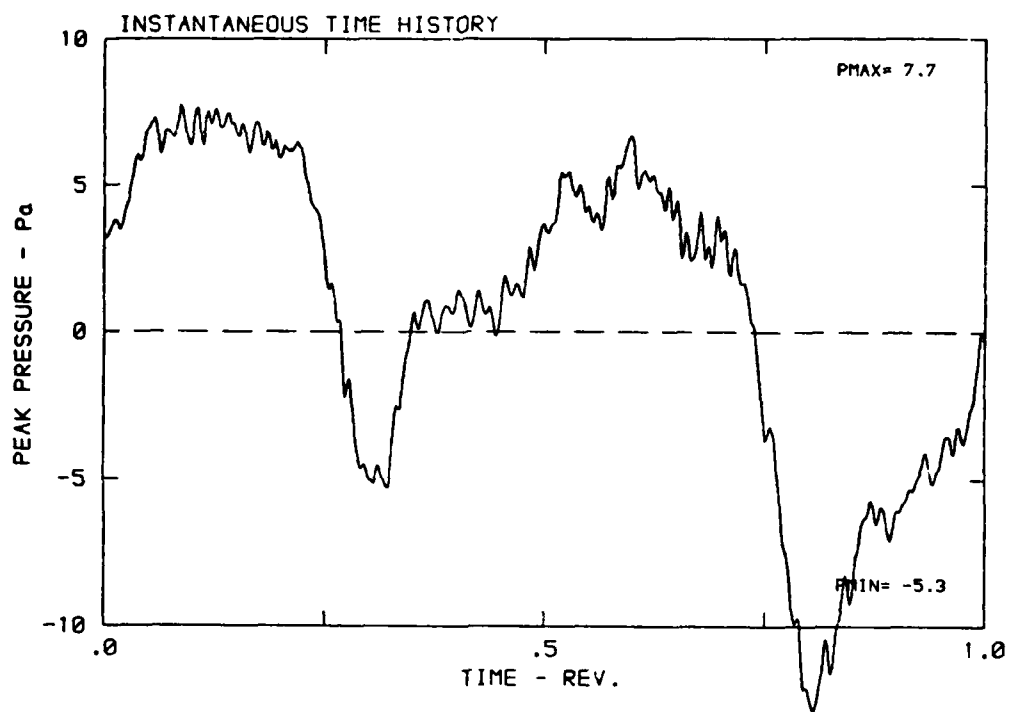
DATA POINT: FNC-4 RUN: 175 MP: 9

$\beta$ : 23.7° MH: .5835 n: 1800 rpm v/u: .268  $\phi$ : 3.6° T: 287.2 K



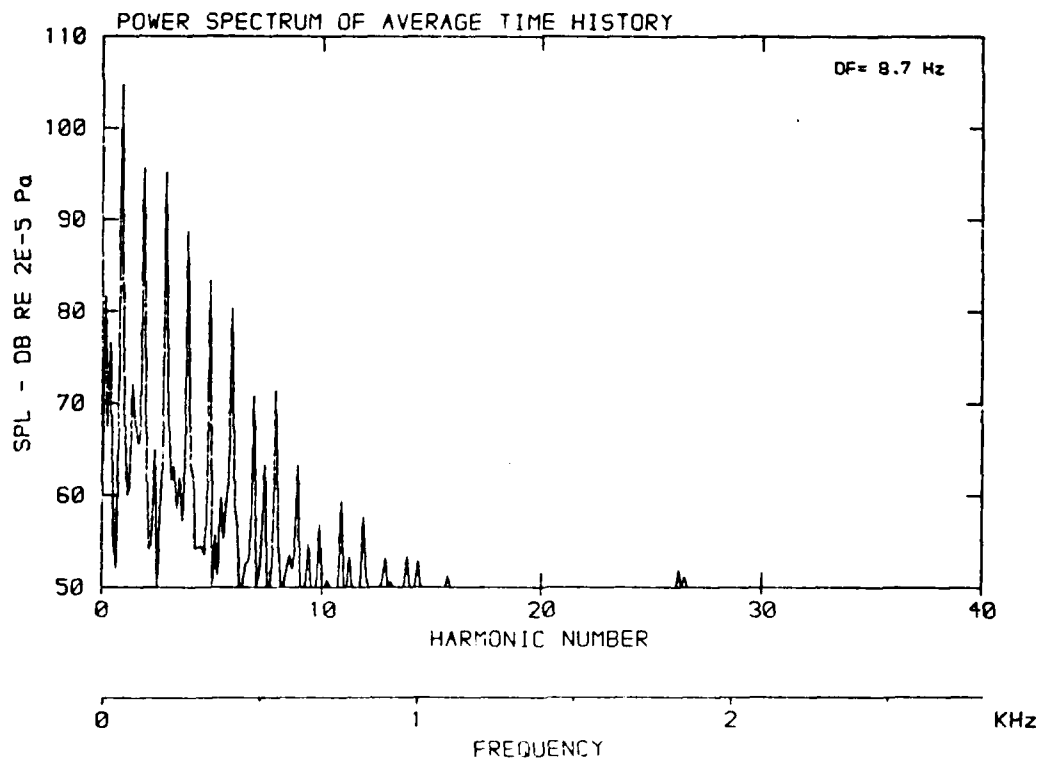
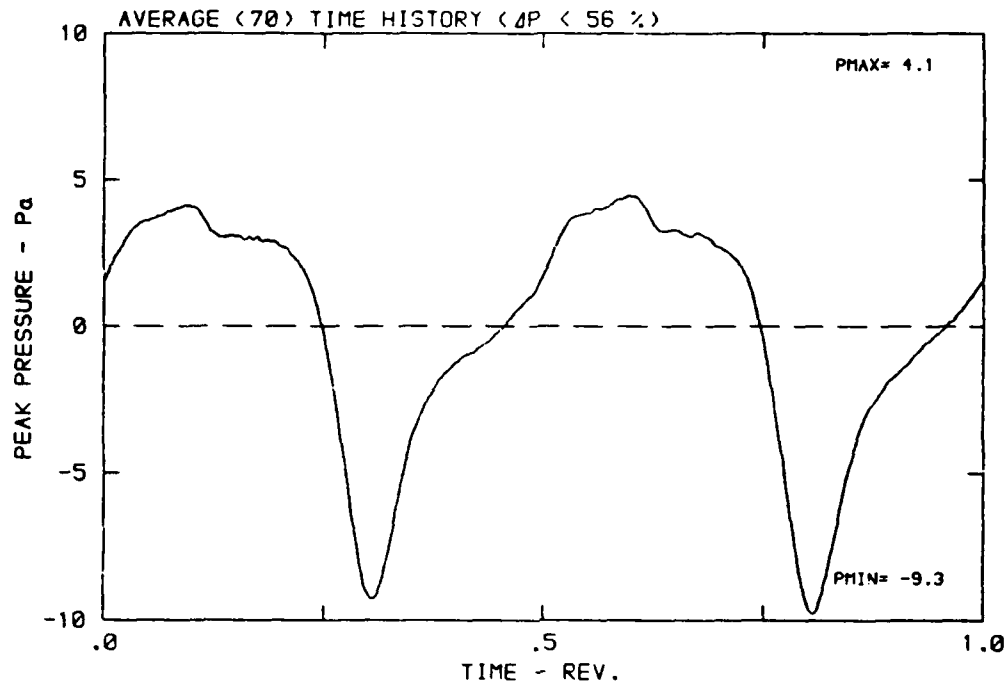
DATA POINT: FNC-5 RUN: 174 MP: 1

$\beta$ : 23.7° MH: .6743 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.7 K



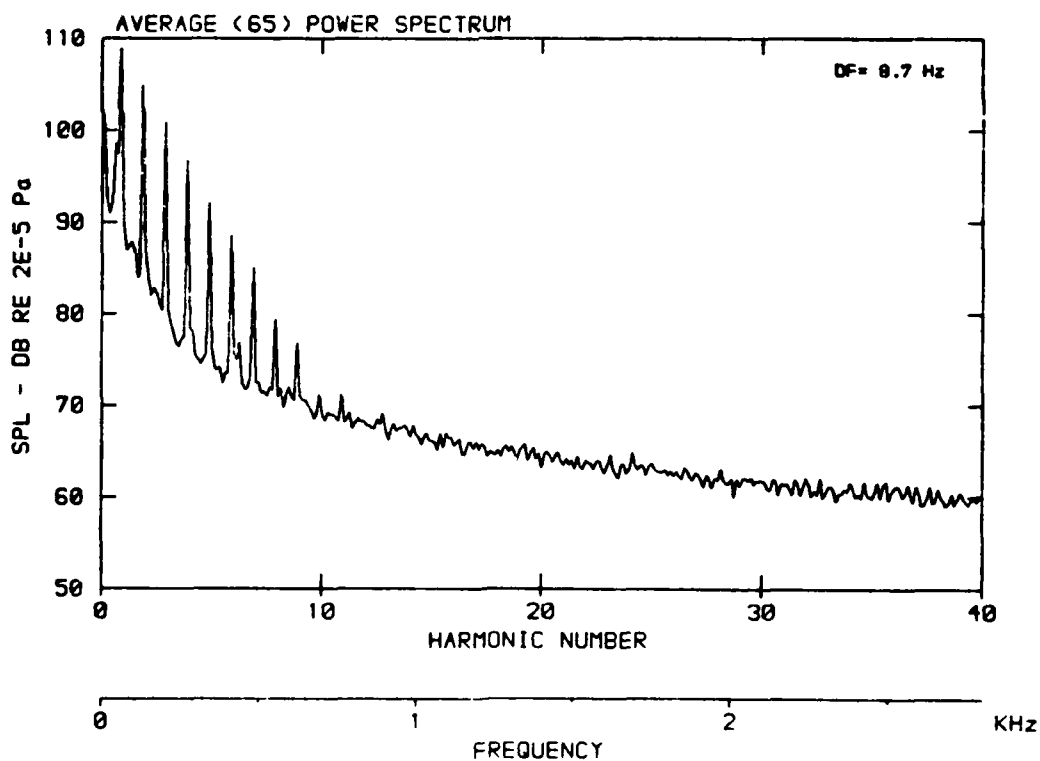
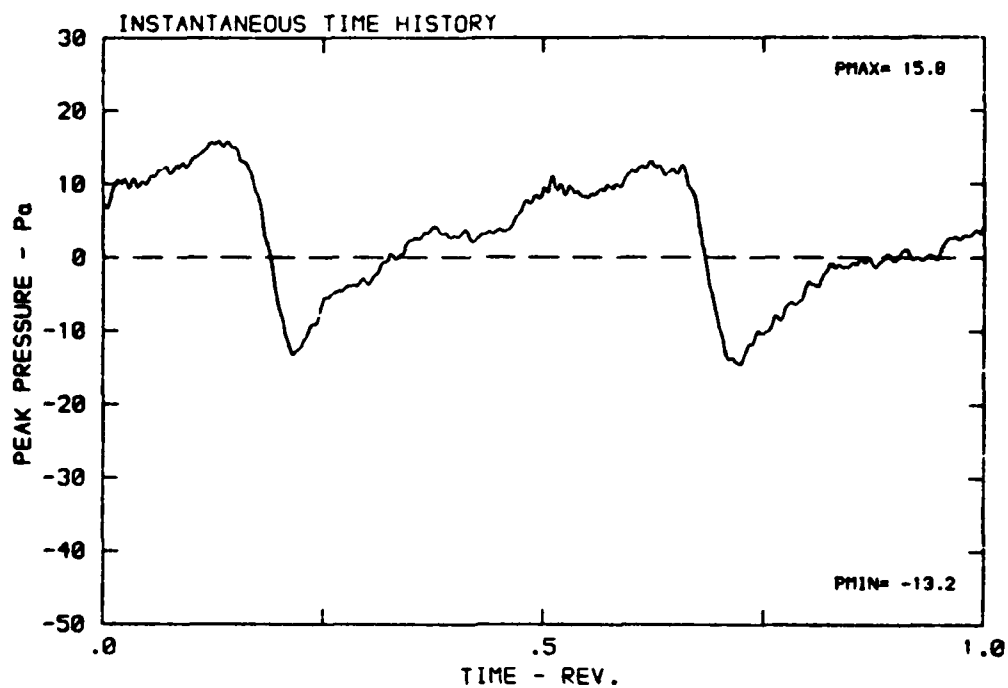
DATA POINT: FNC-5 RUN: 174 MP: 1

$\beta$ : 23.7° MH: .6743 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.7 K



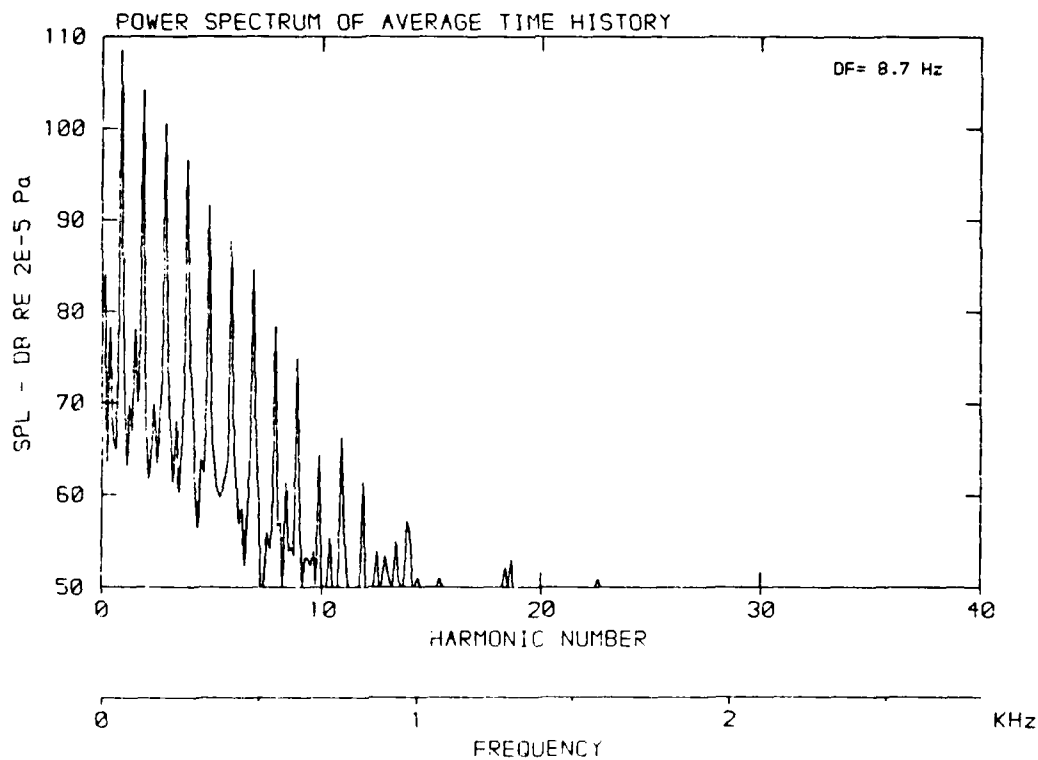
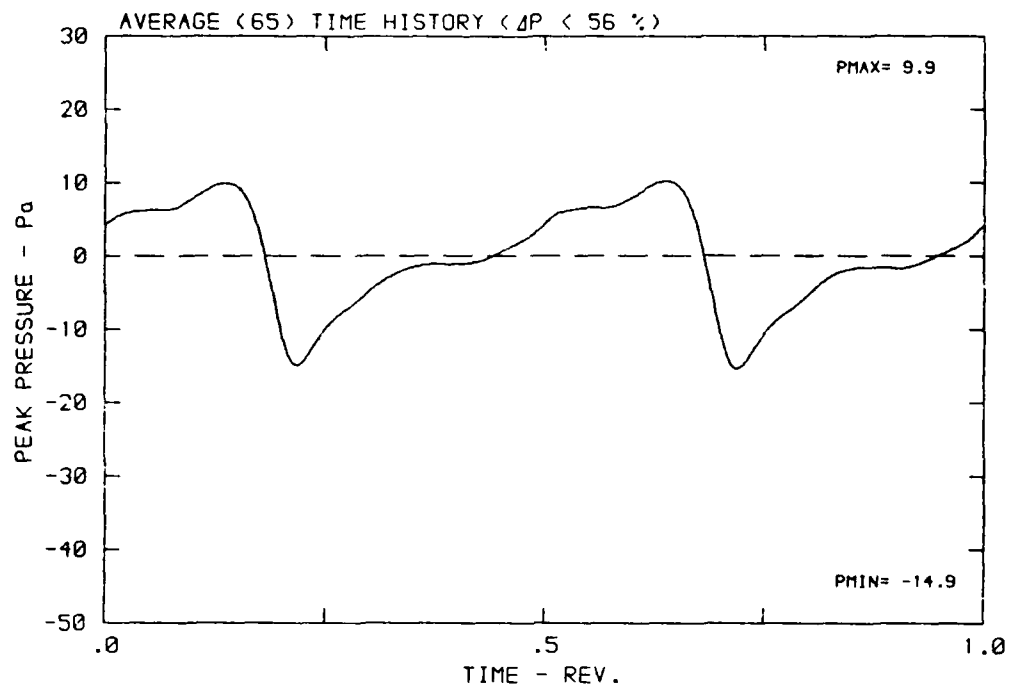
DATA POINT: FNC-5 RUN: 174 MP: 2

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



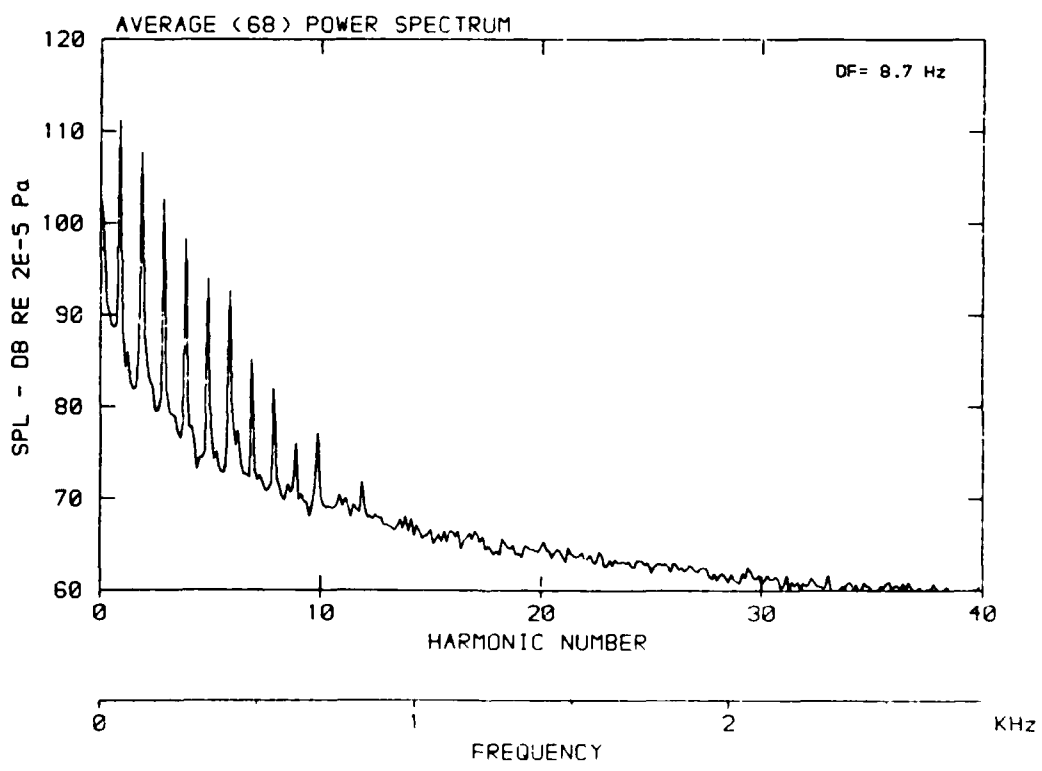
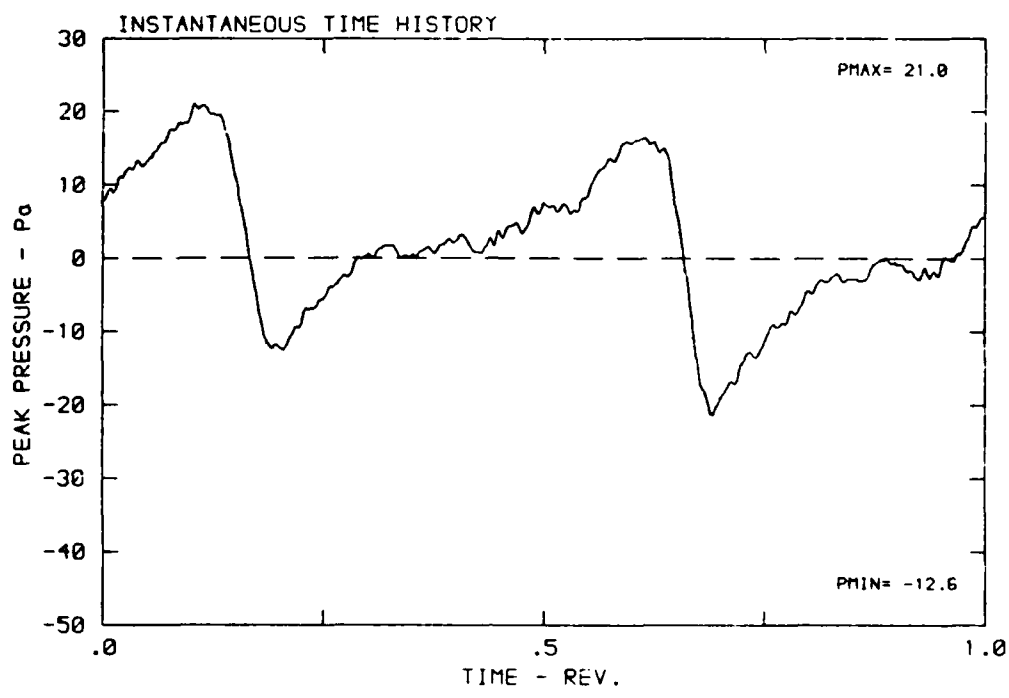
DATA POINT: FNC-5 RUN: 174 MP: 2

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



DATA POINT: FNC-5 RUN: 174 MP: 3

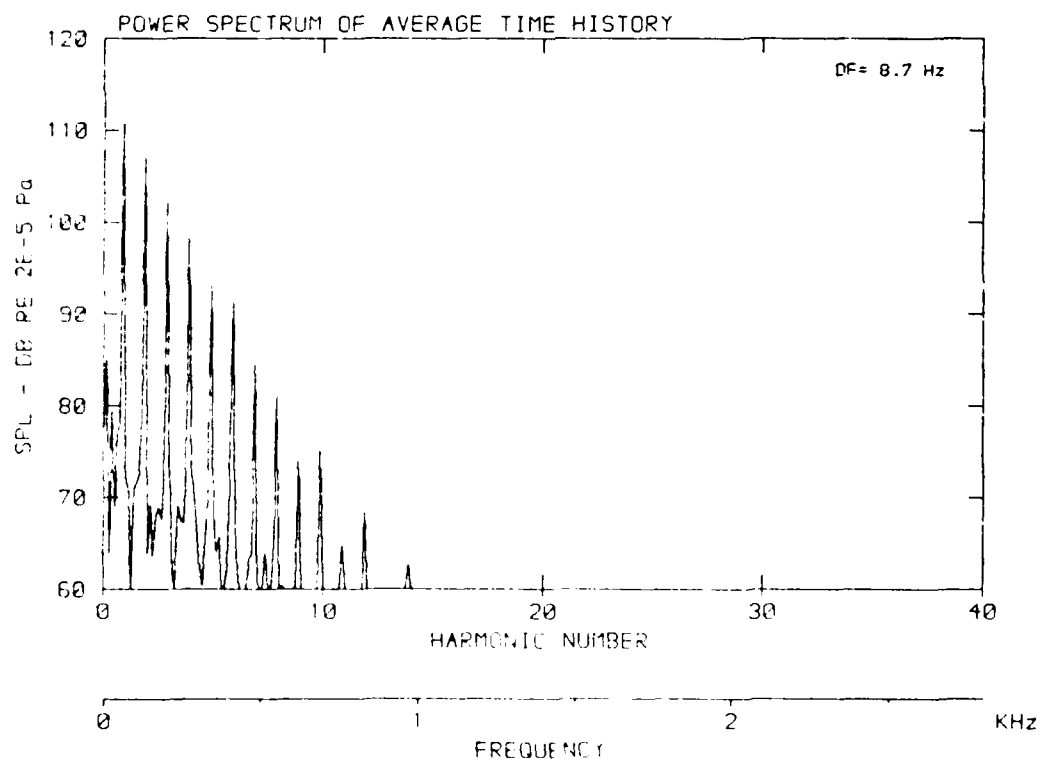
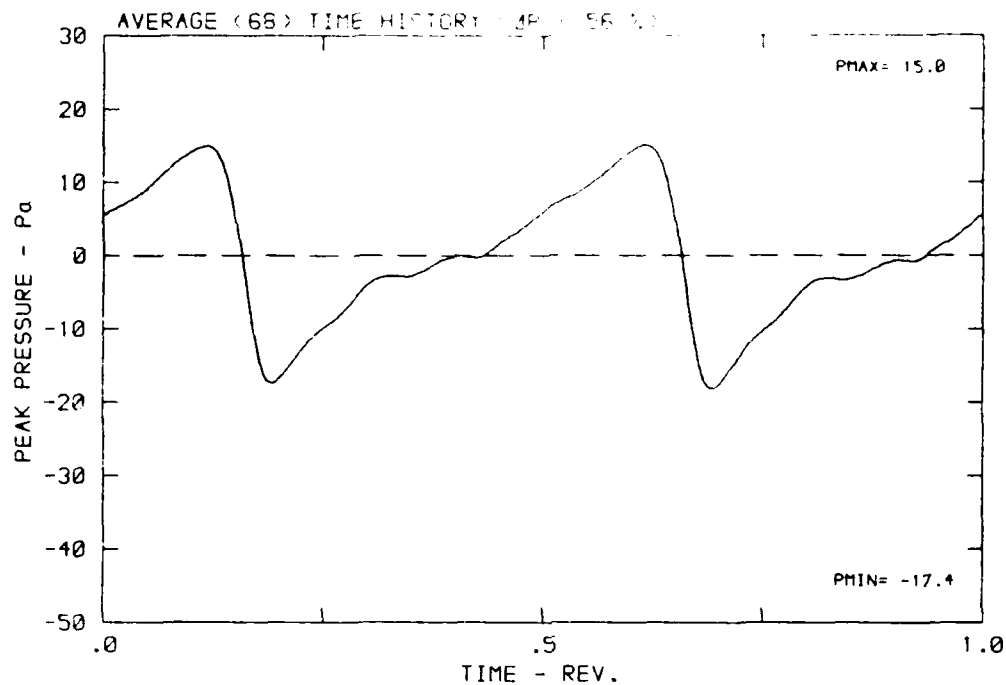
$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K





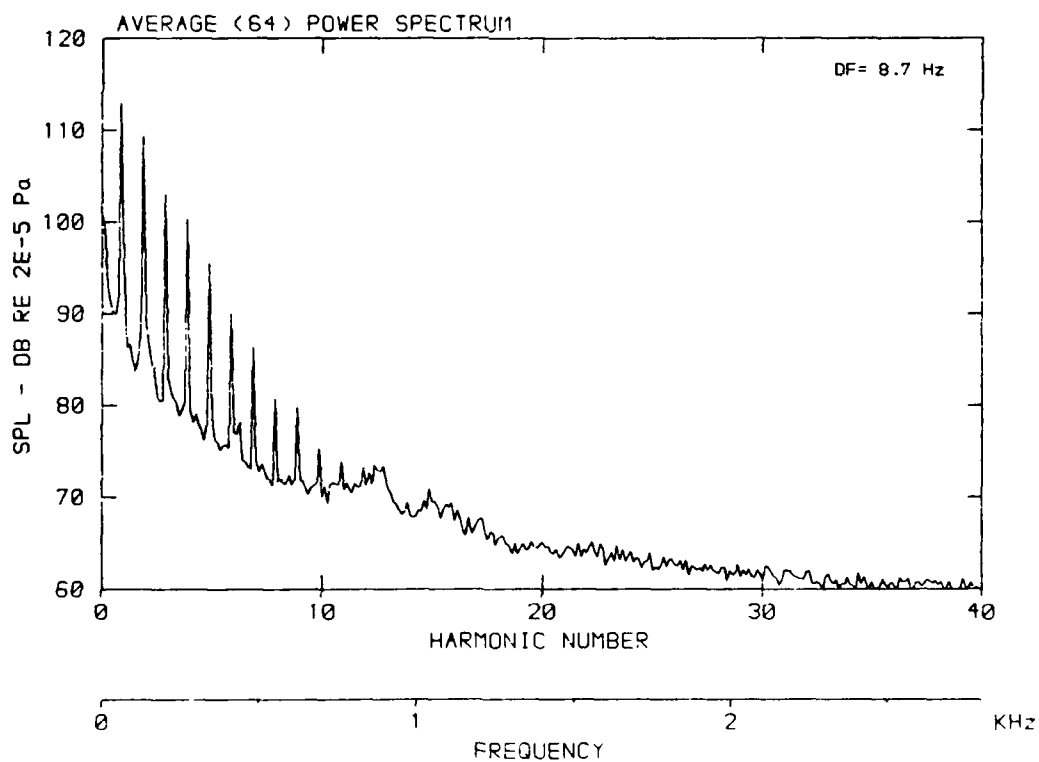
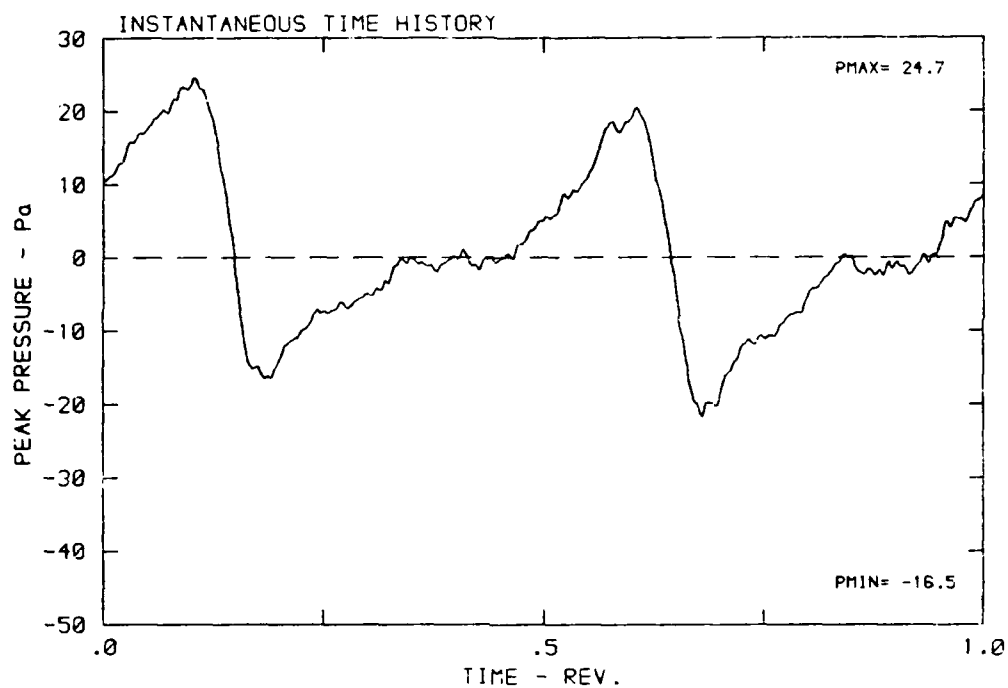
DATA POINT: FNC-5    RUN: 174    MP: 3

$\beta$ : 23.7°    MH: .6743    n: 2100 rpm     $\lambda$ : 1.231     $\phi$ : 3.6°    T: 287.7 K



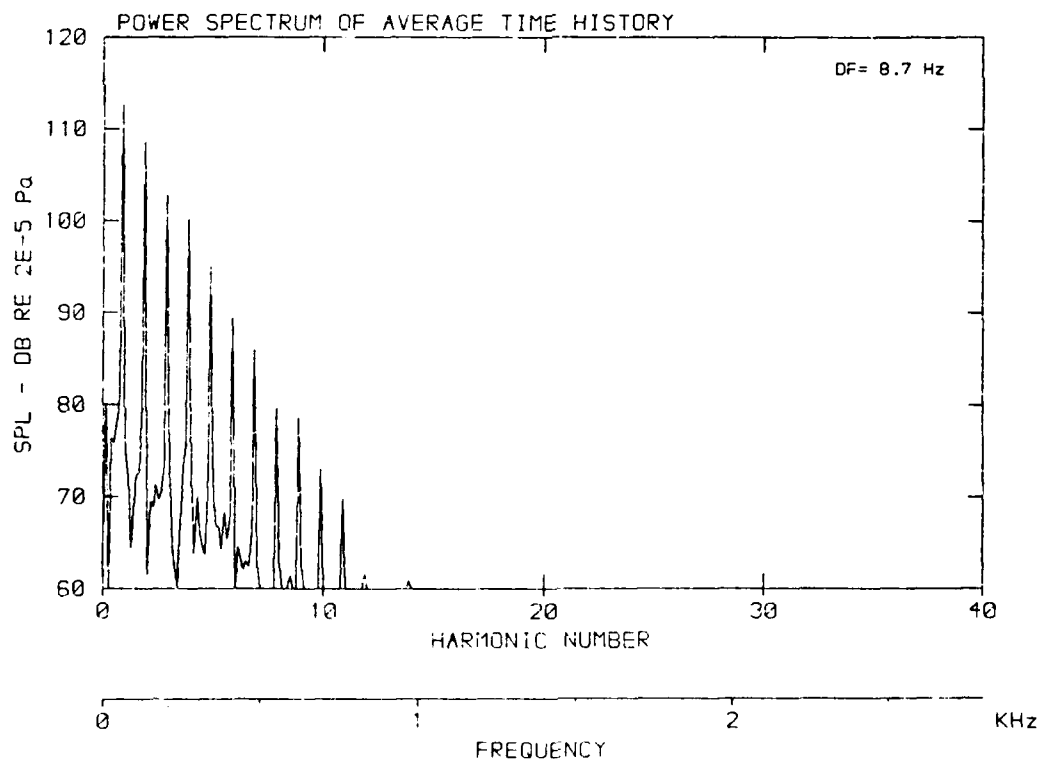
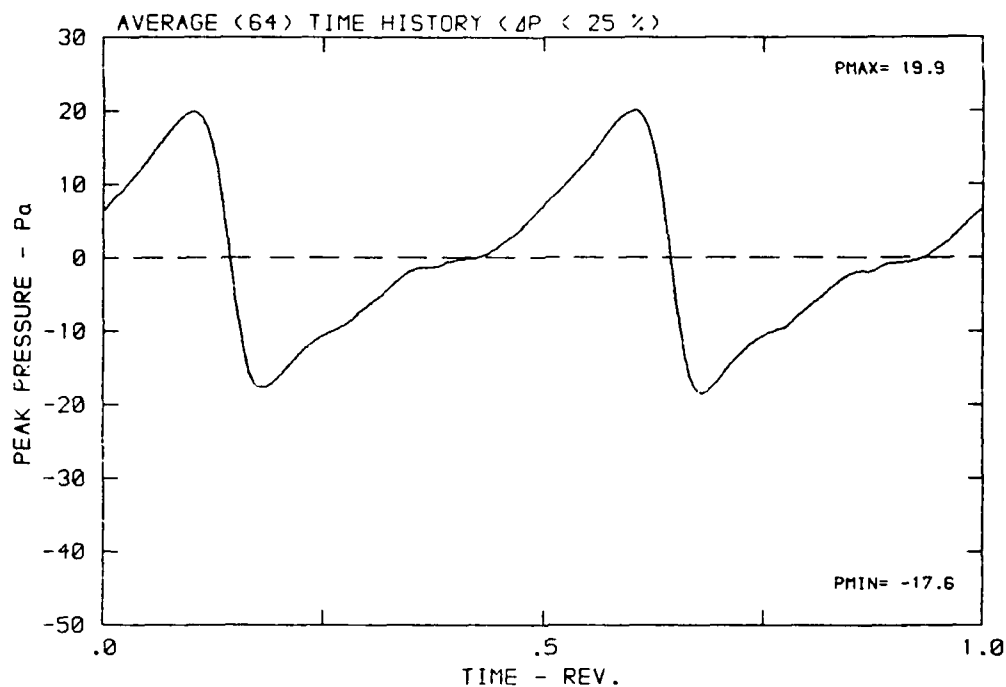
DATA POINT: FNC-5 RUN: 174 MP: 4

$\beta$ : 23.7° MH: .6743 n: 2100 rpm  $v/u$ : .231  $\phi$ : 3.6° T: 287.7 K



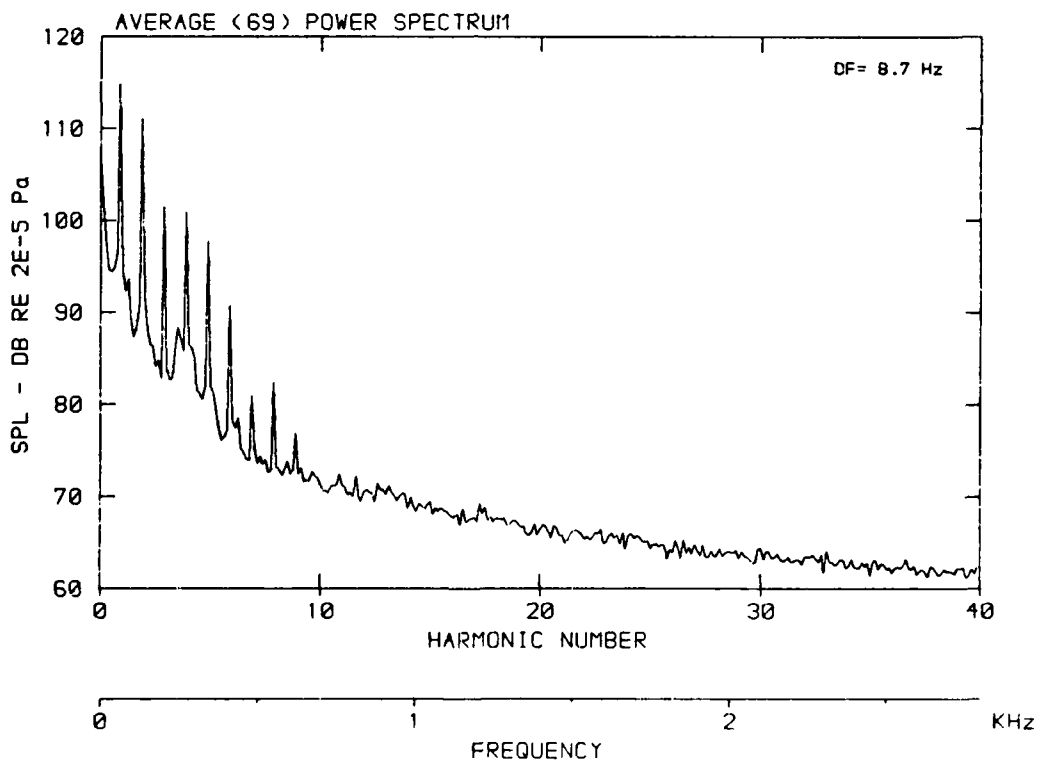
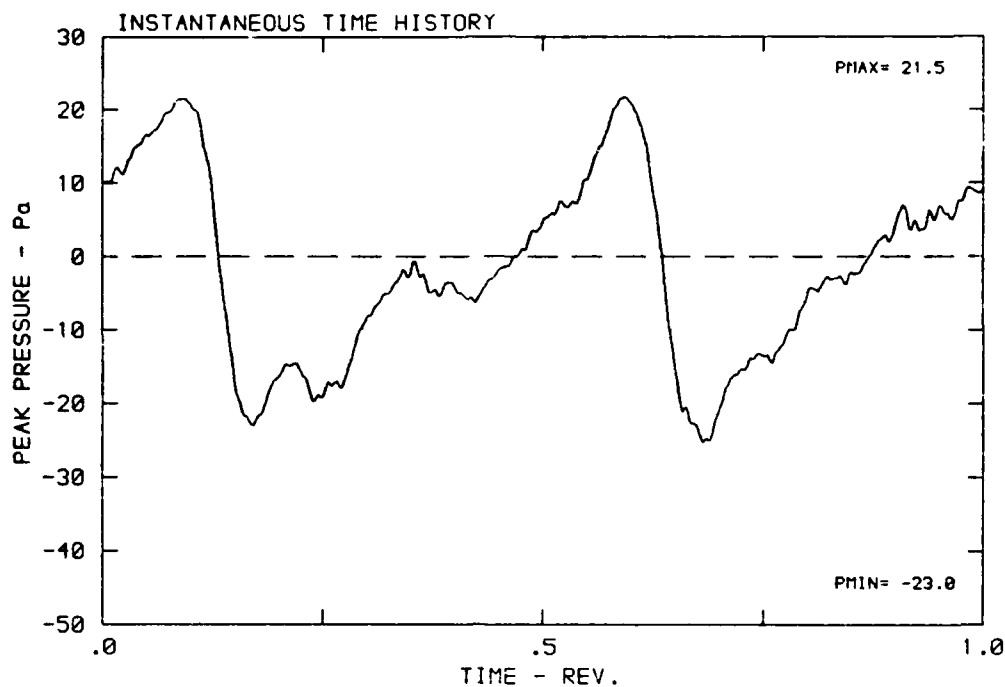
DATA POINT: FNC-5 RUN: 174 MP: 4

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



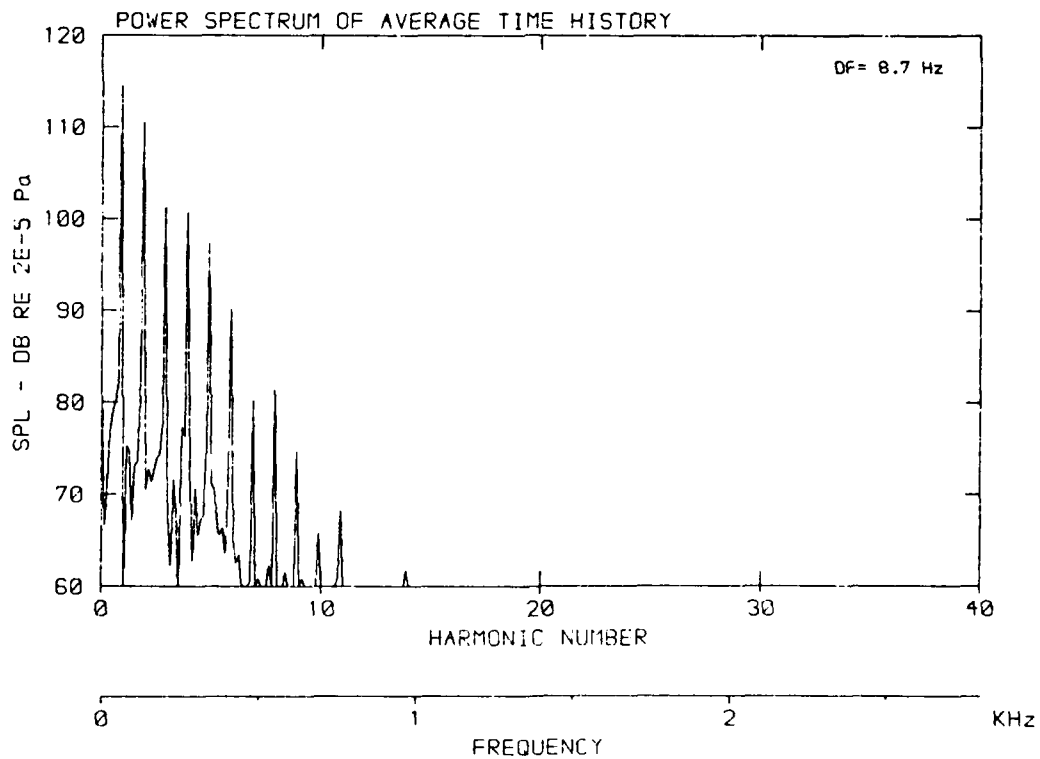
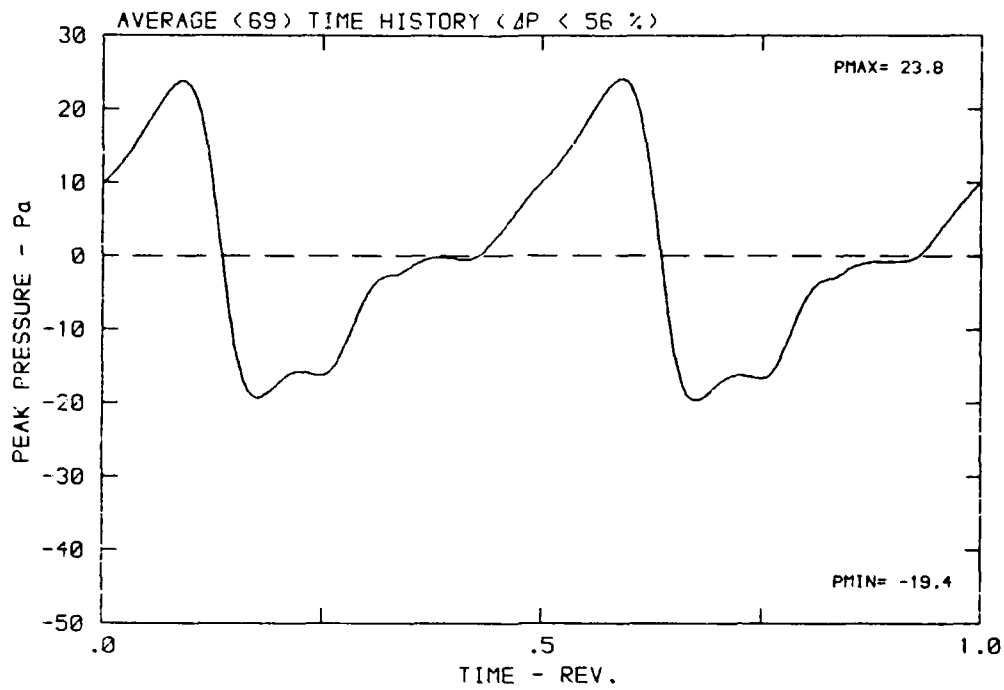
DATA POINT: FNC-5 RUN: 174 MP: 5

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



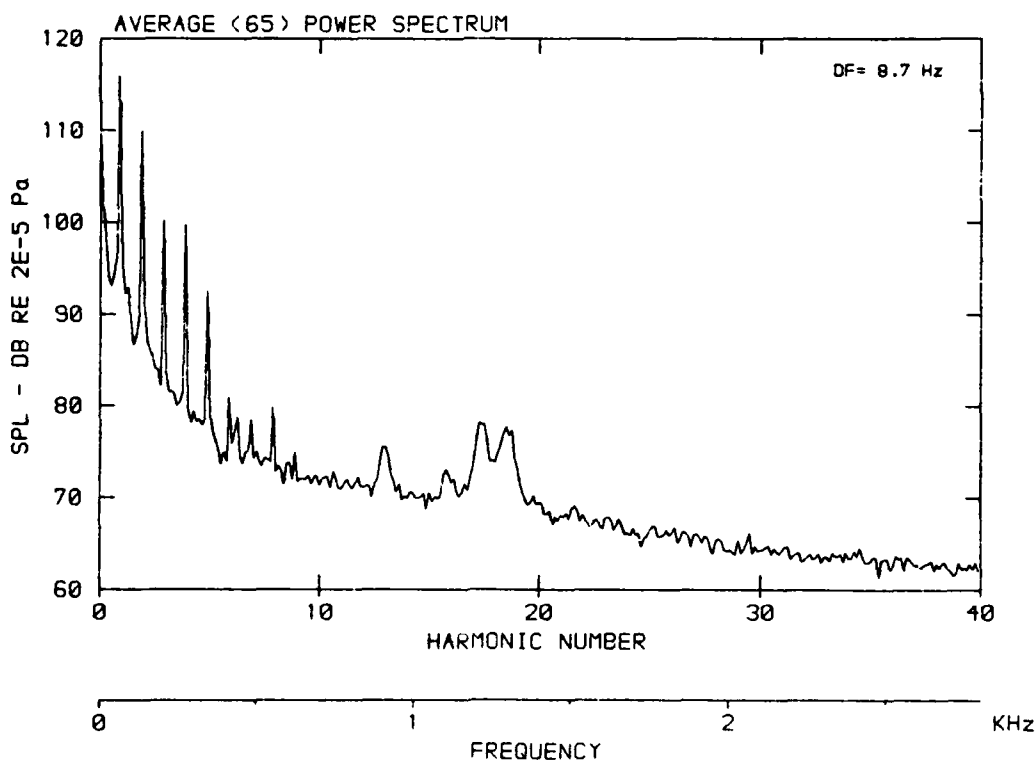
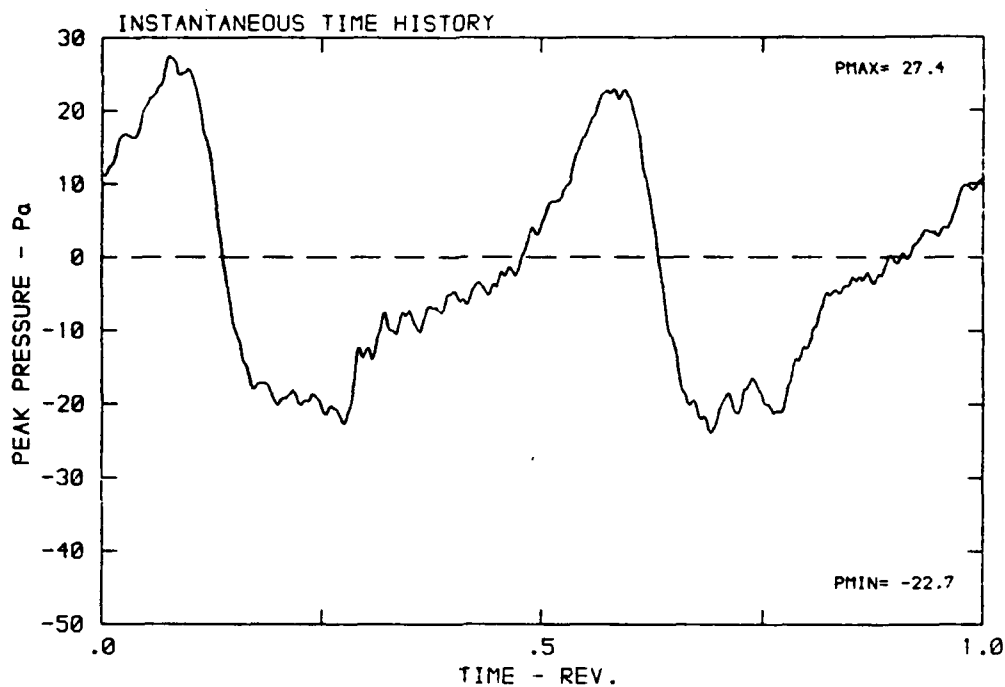
DATA POINT: FNC-5 RUN: 174 MP: 5

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



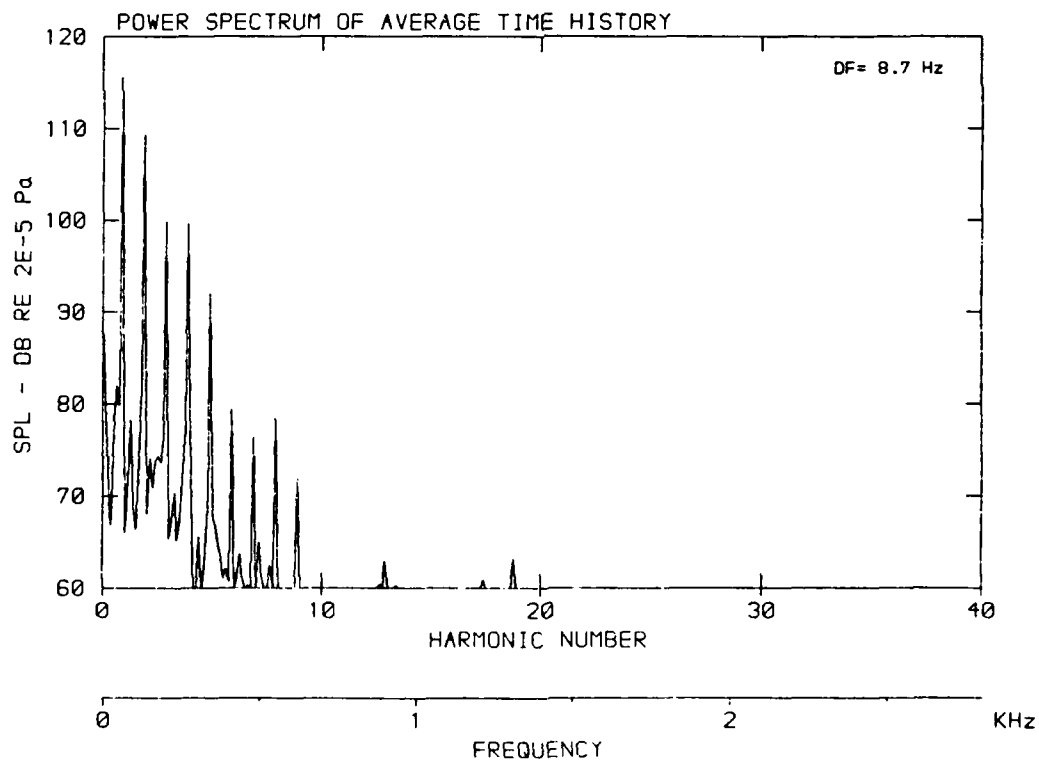
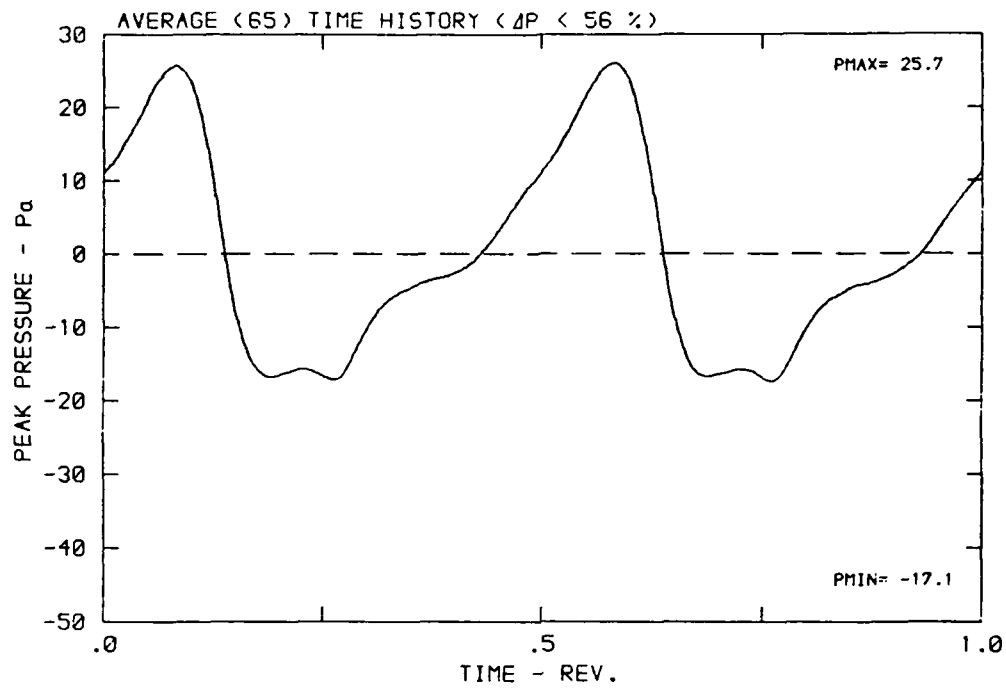
DATA POINT: FNC-5 RUN: 174 MP: 6

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



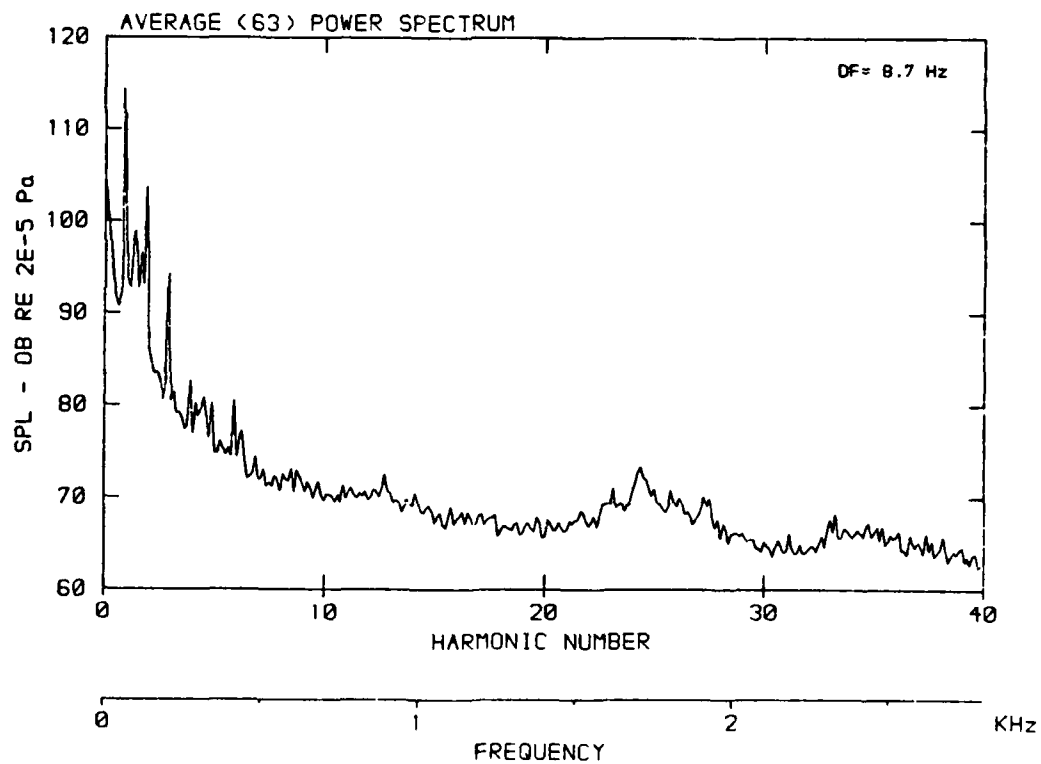
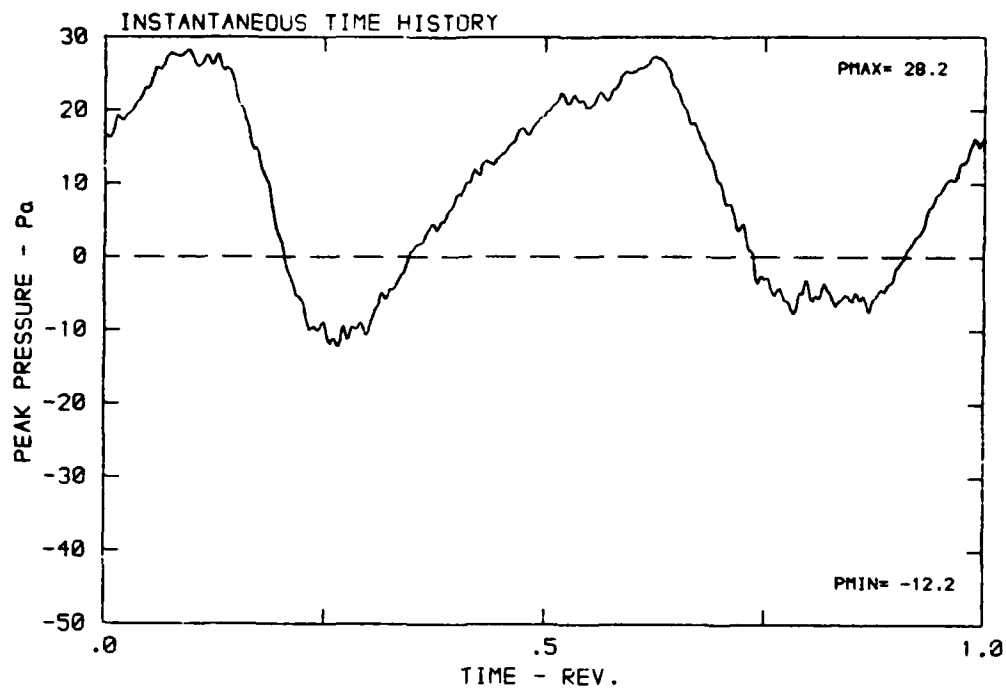
DATA POINT: FNC-5 RUN: 174 MP: 6

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



DATA POINT: FNC-5 RUN: 174 MP: 7

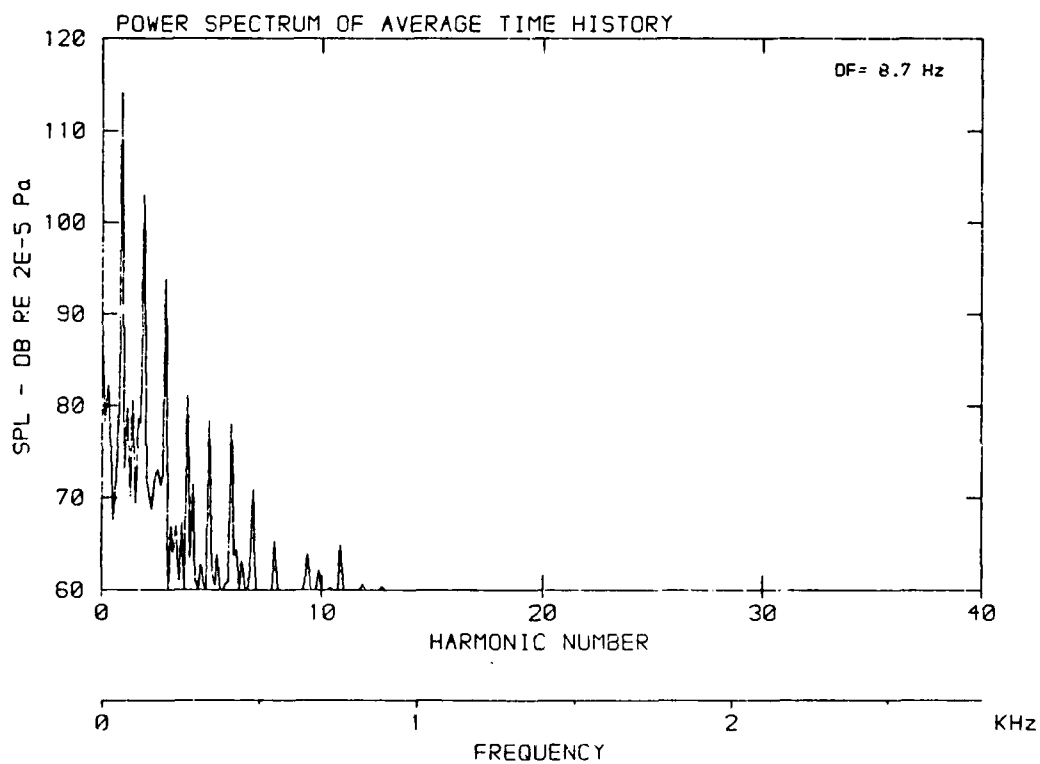
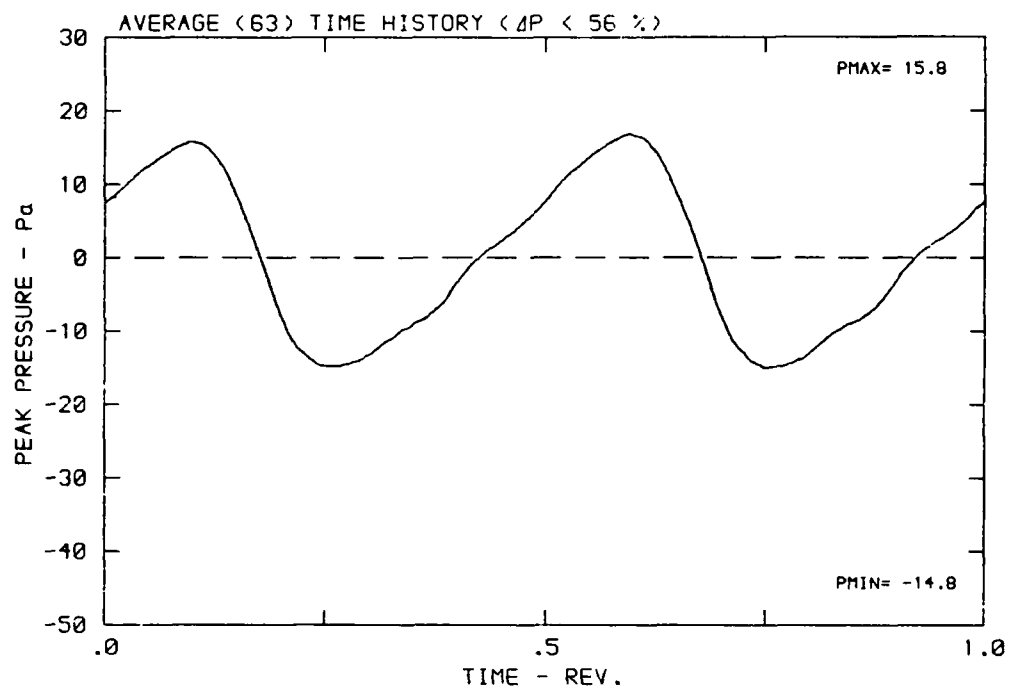
$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K





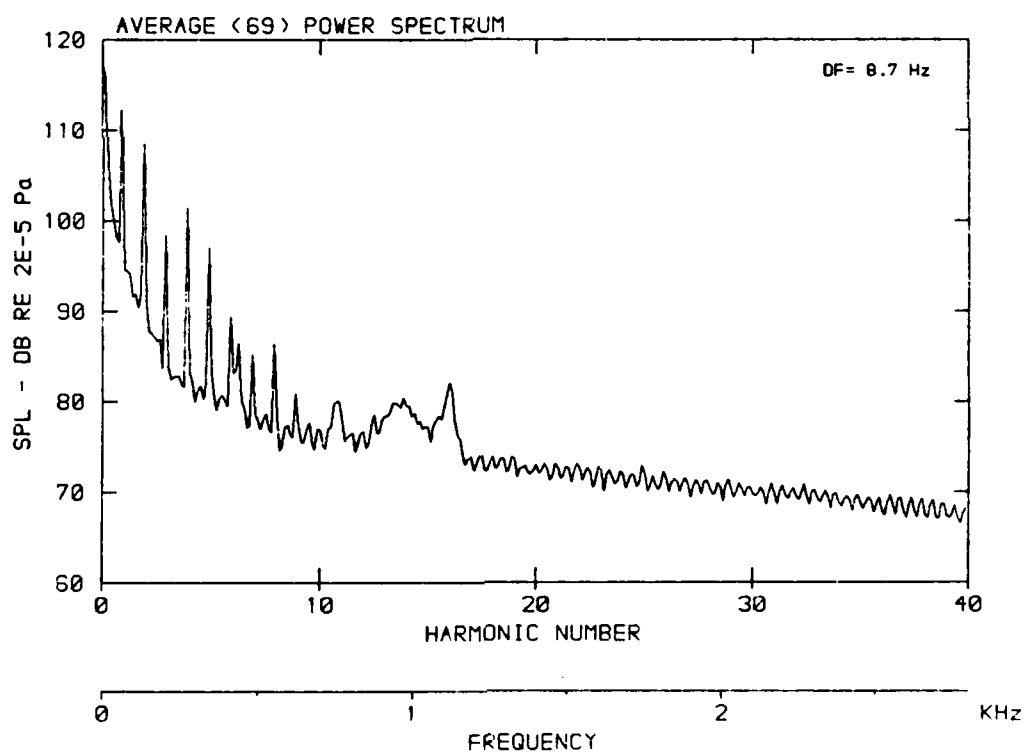
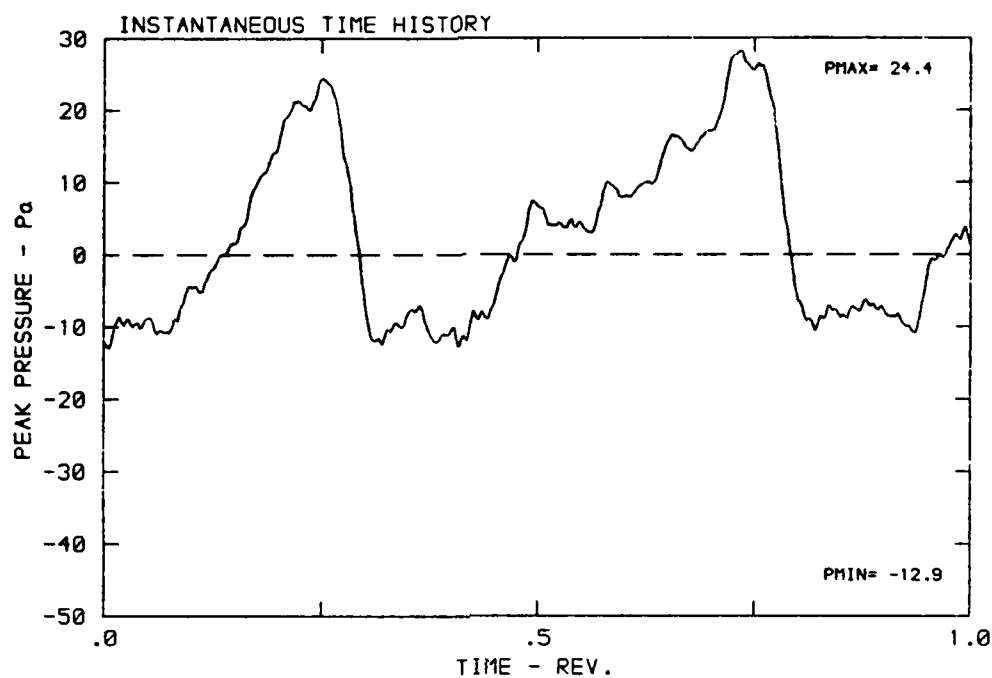
DATA POINT: FNC-5 RUN: 174 MP: 7

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



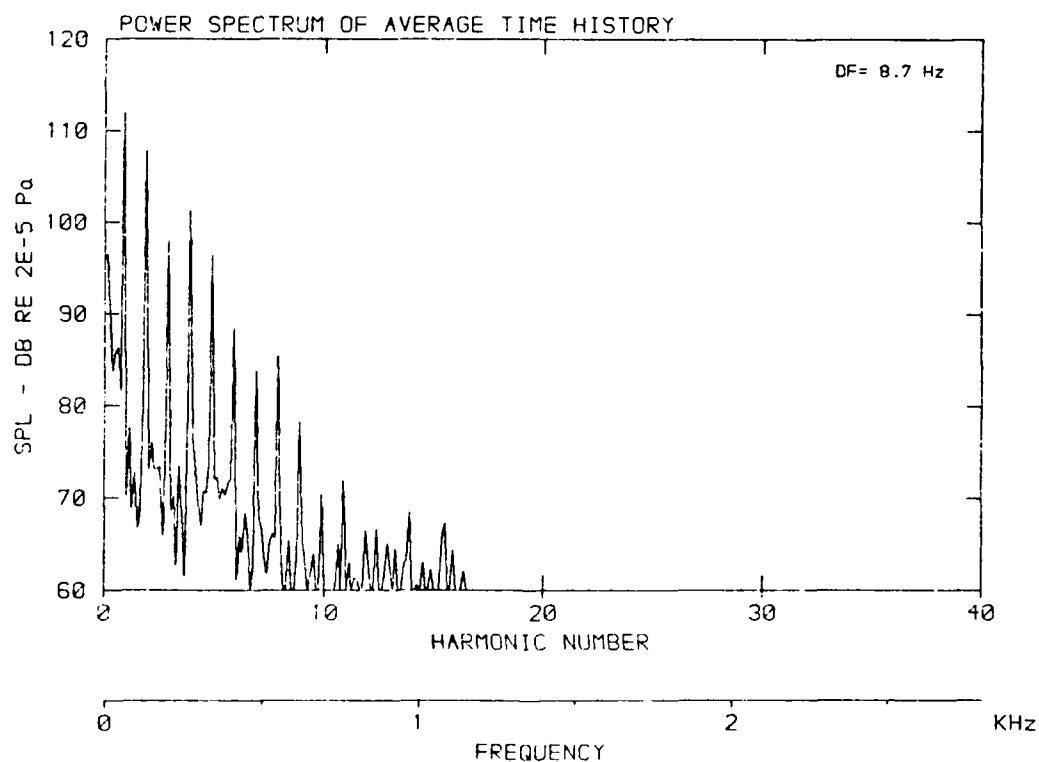
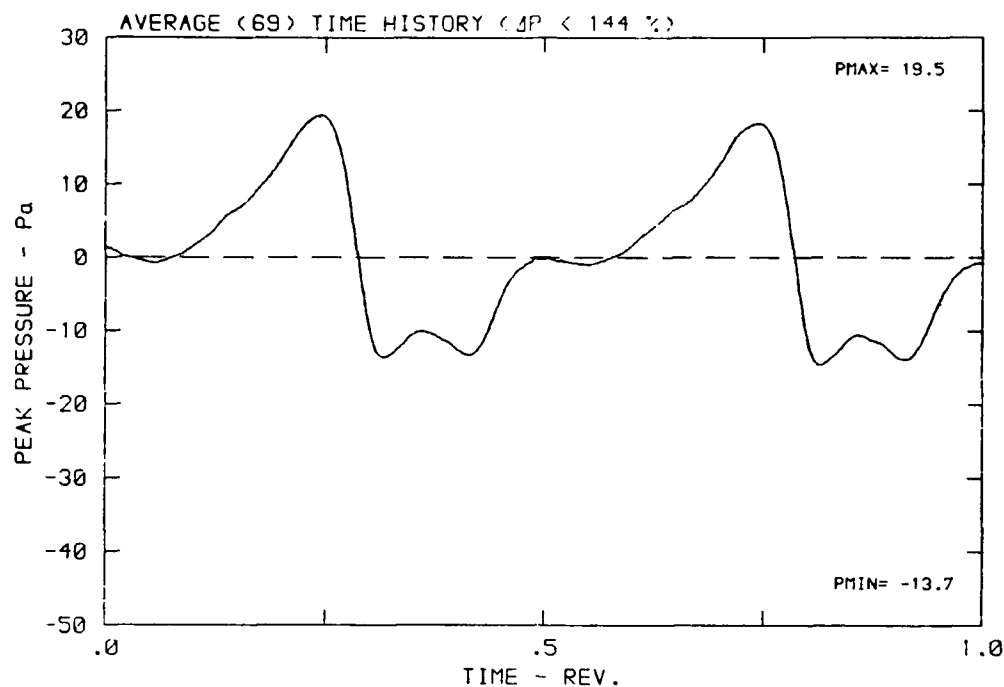
DATA POINT: FNC-5 RUN: 174 MP: 9

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



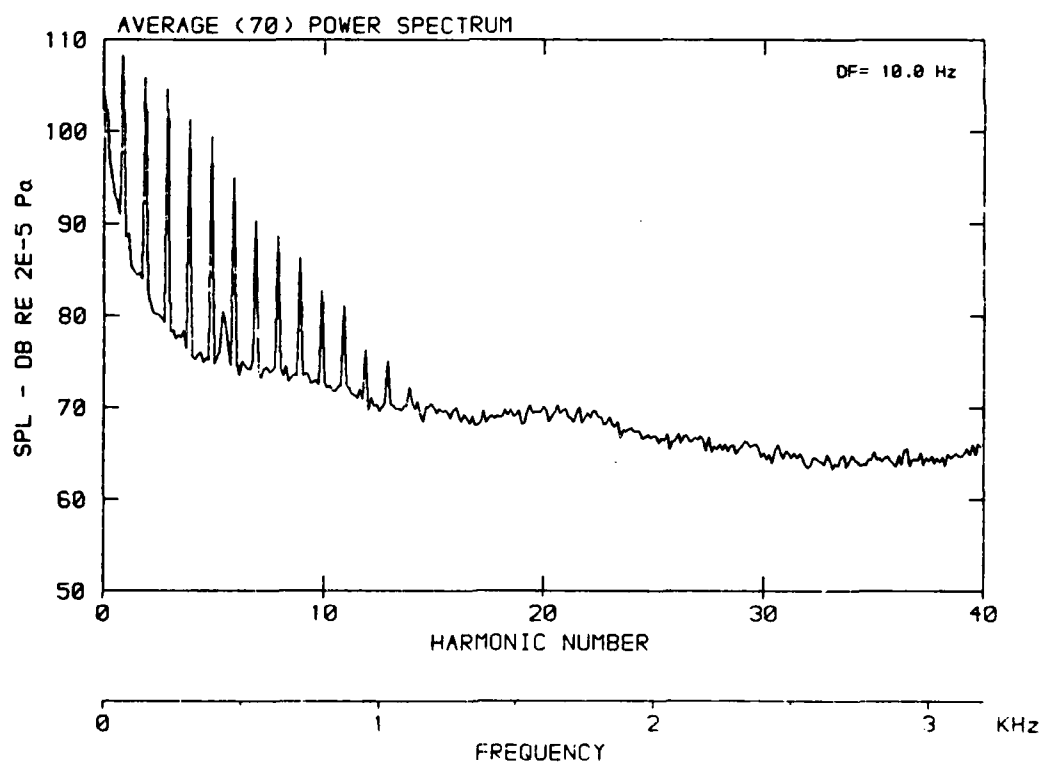
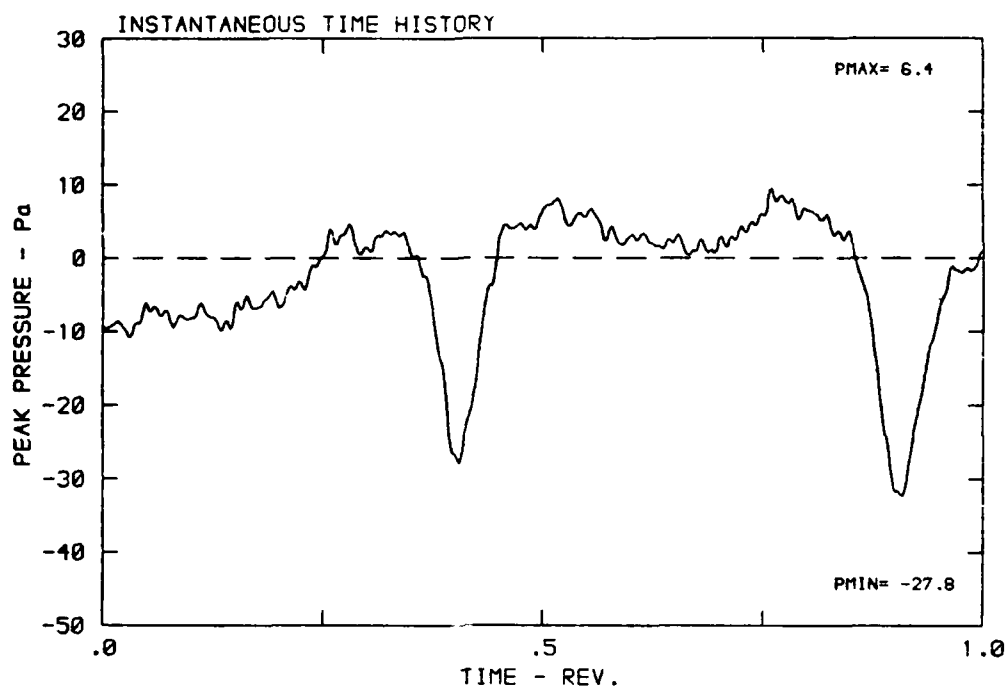
DATA POINT: FNC-5 RUN: 174 MP: 9

$\beta$ : 23.7° MH: .6743 n: 2100 rpm v/u: .231  $\phi$ : 3.6° T: 287.7 K



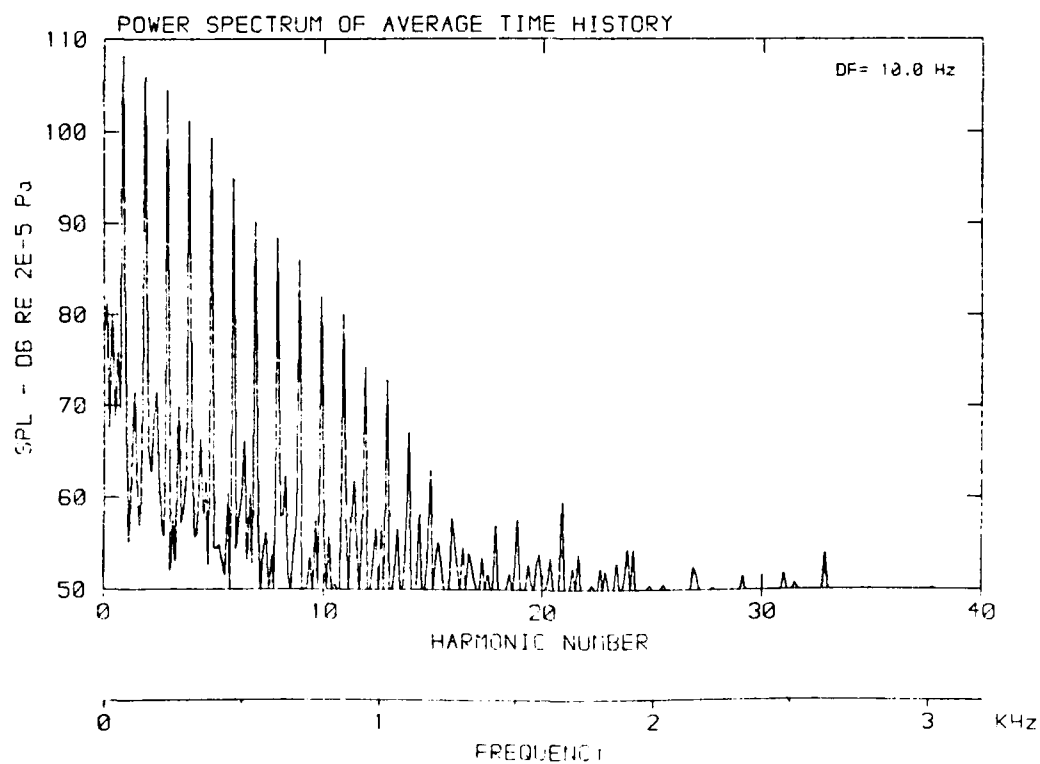
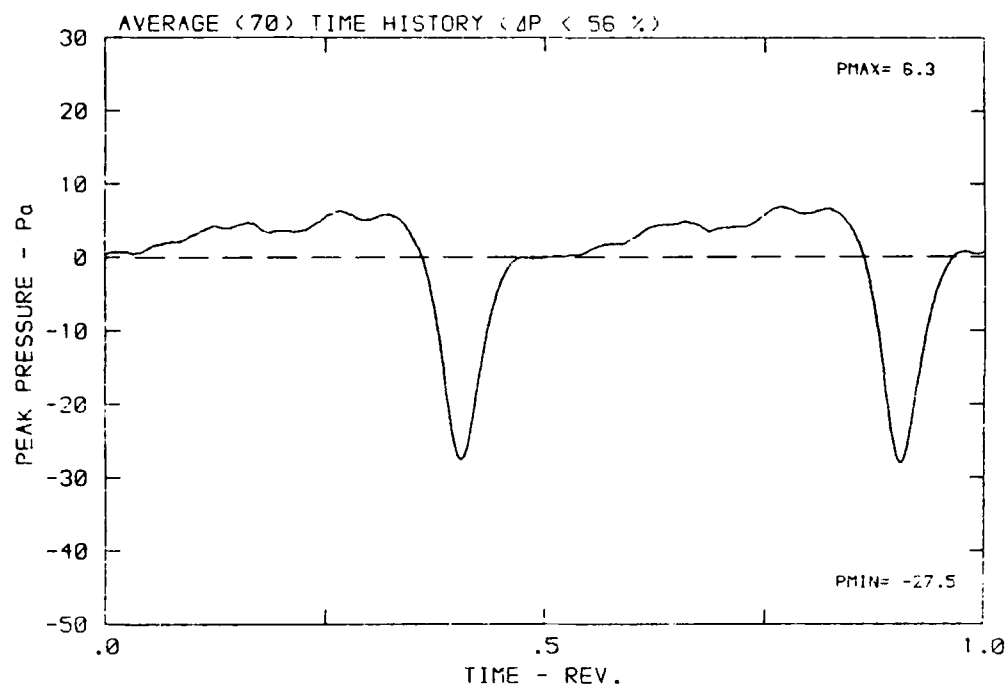
DATA POINT: FNC-6 RUN: 173 MP: 1

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



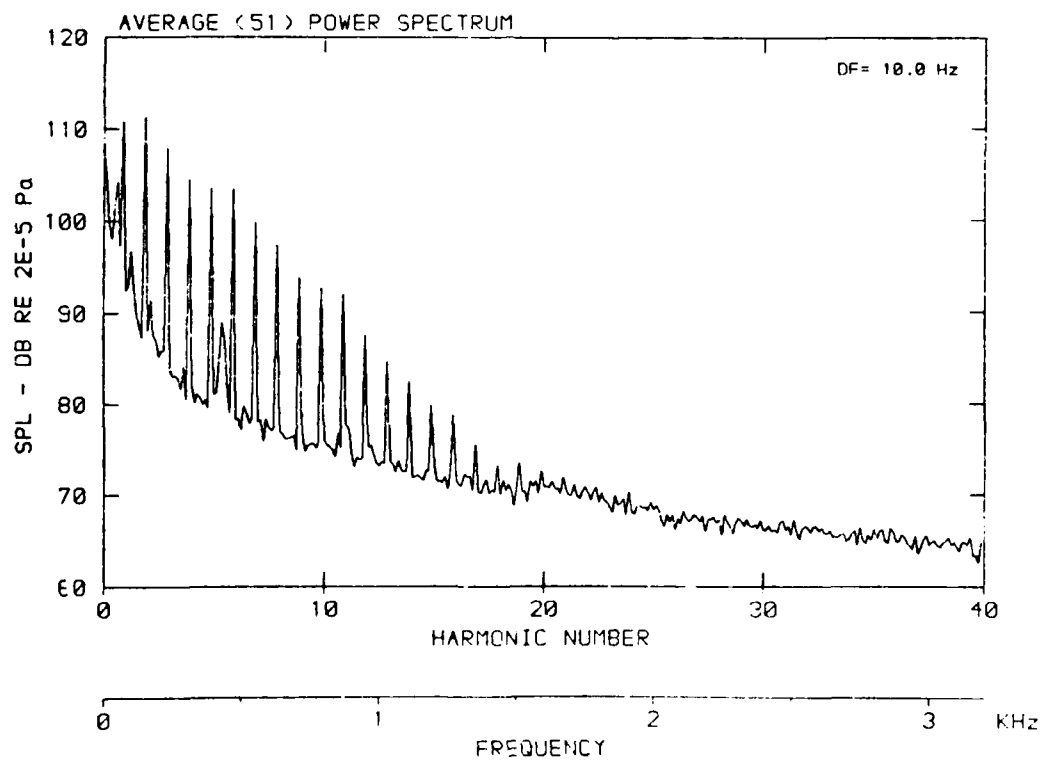
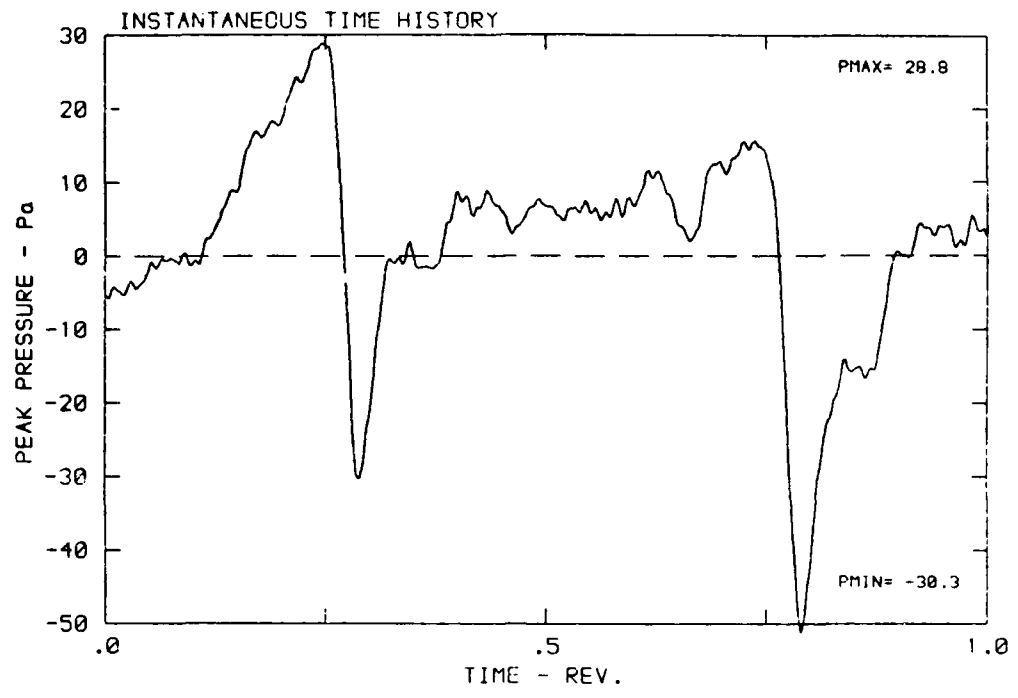
DATA POINT: FNC-6 RUN: 173 MP: 1

$\beta$ : 23.7° MH: .7781 n: 2400 rpm  $v/u$ : .264  $\phi$ : 3.6° T: 296.6 K



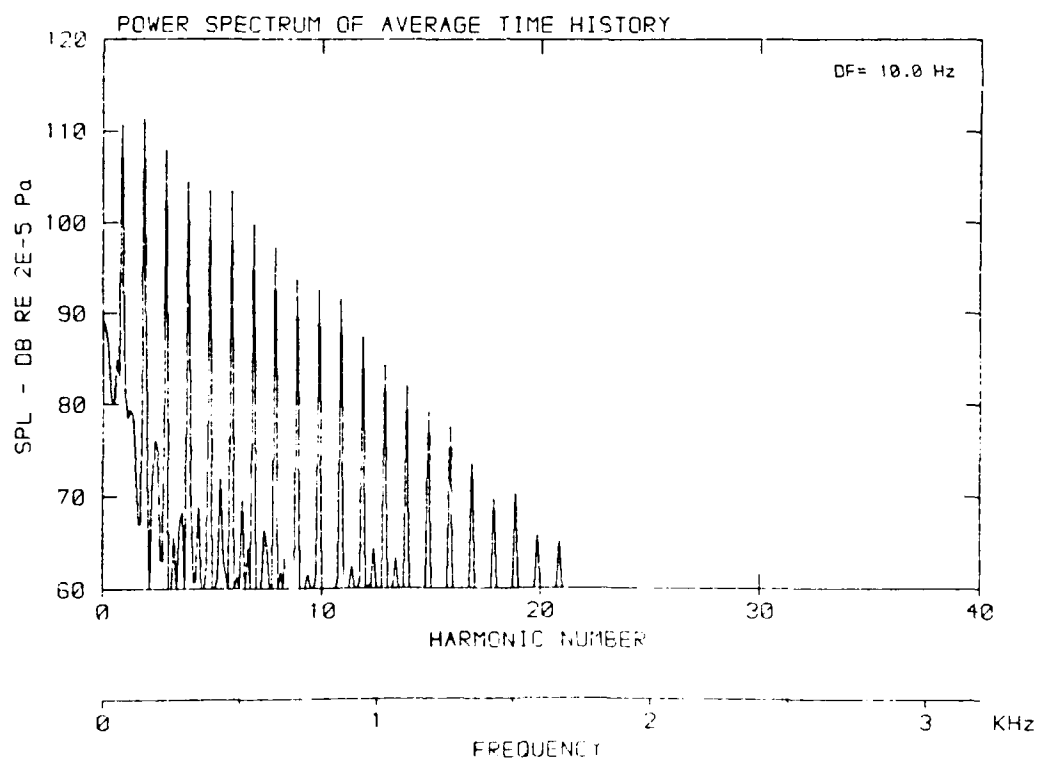
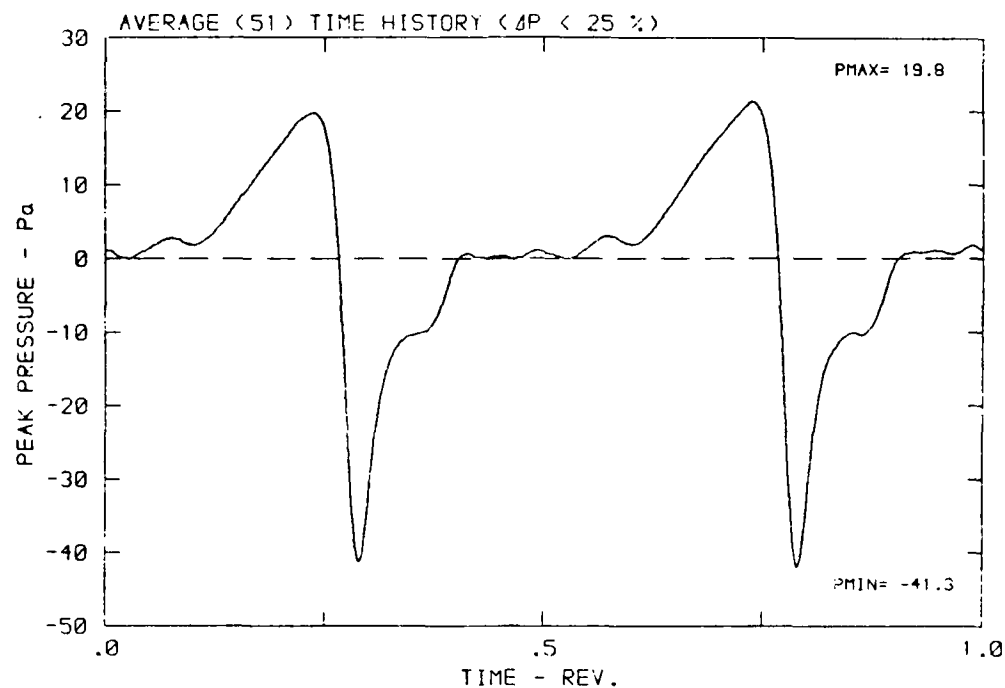
DATA POINT: FNC-6 RUN: 173 MP: 2

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 k



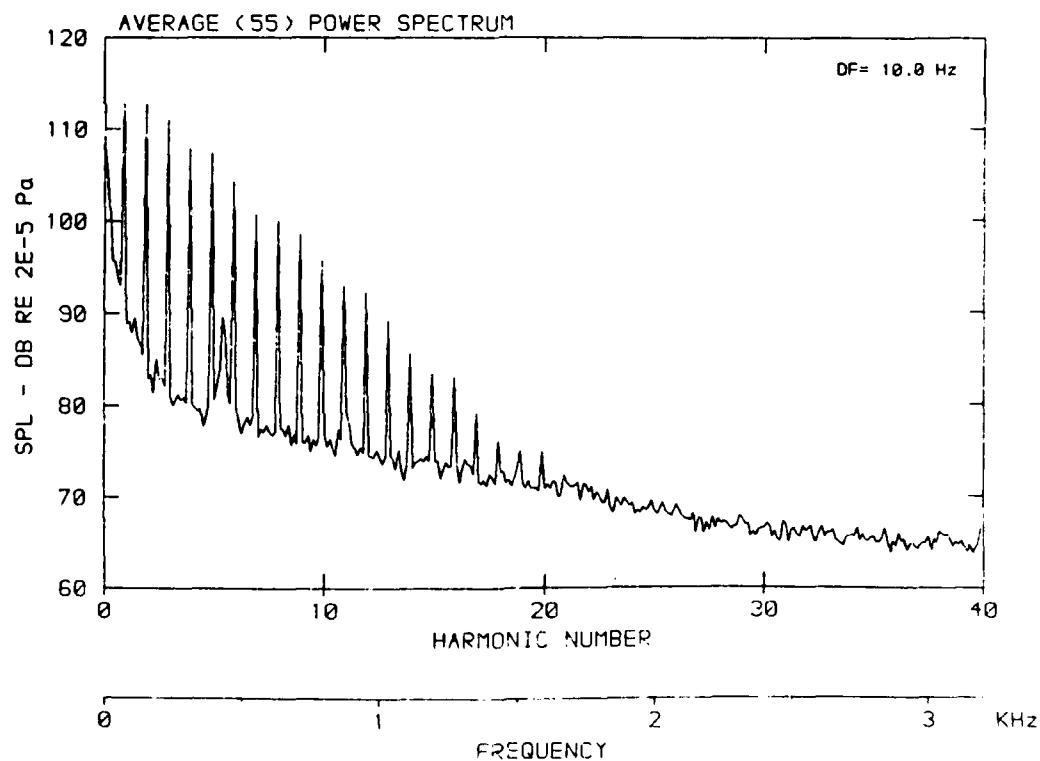
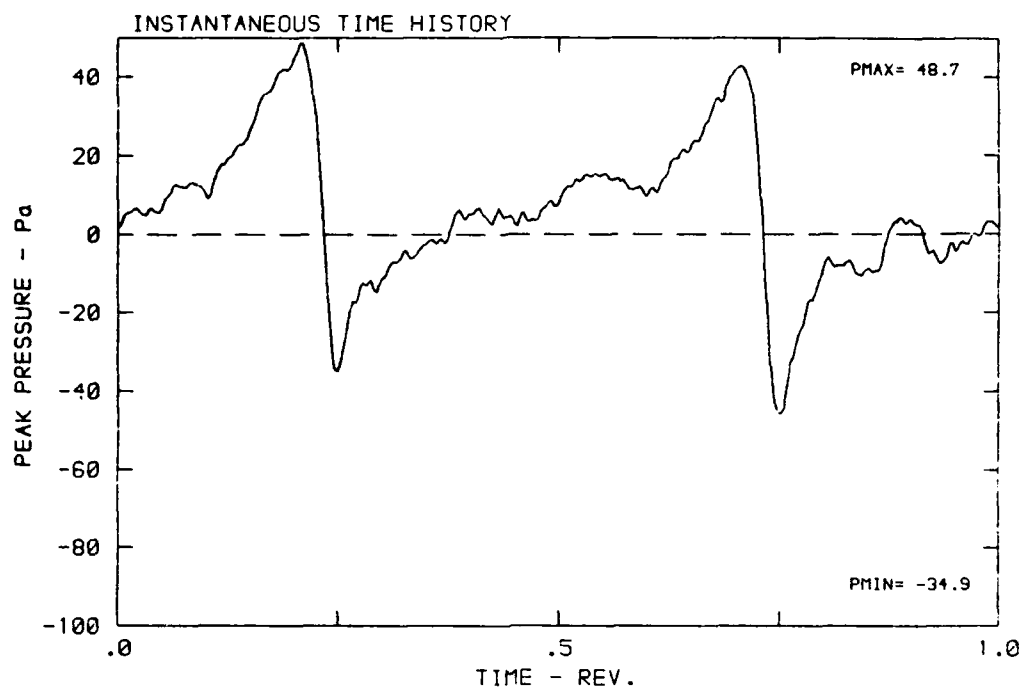
DATA POINT: FNC-6 RUN: 173 MP: 2

$\beta$ : 23.7° MH: .7781 n: 2400 rpm  $v/u$ : .264  $\phi$ : 3.6° T: 286.6 K



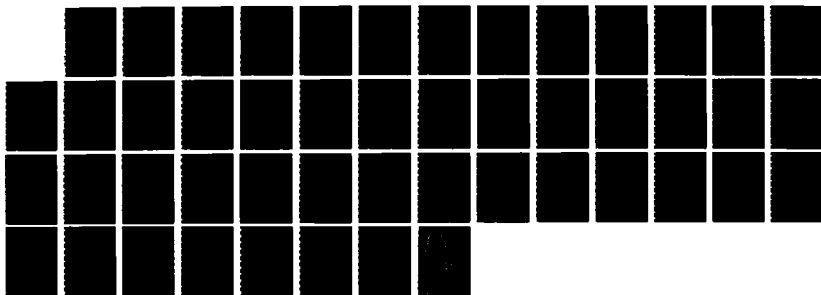
DATA POINT: FNC-6 RUN: 173 MP: 3

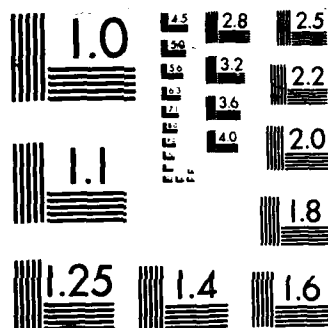
$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K





AD-A174 982 DFVLR/FAR (DEUTSCHE FORSCHUNGS-UND VERSUCHSANSTALT FUER 1/3  
LUFT UND RAUMFAHR (U) DEUTSCHE FORSCHUNGS- UND  
VERSUCHSANSTALT FUER LUFT- UND RAUMF  
UNCLASSIFIED W M DOBRZYNSKI ET AL 1986 F/G 28/1 NL

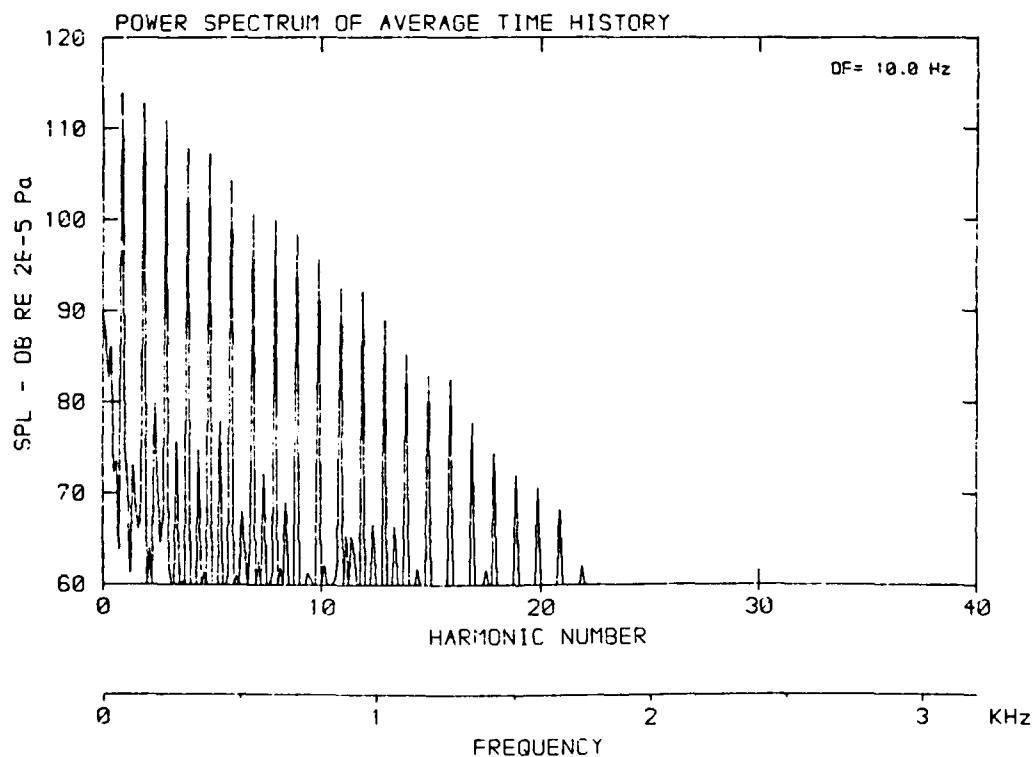
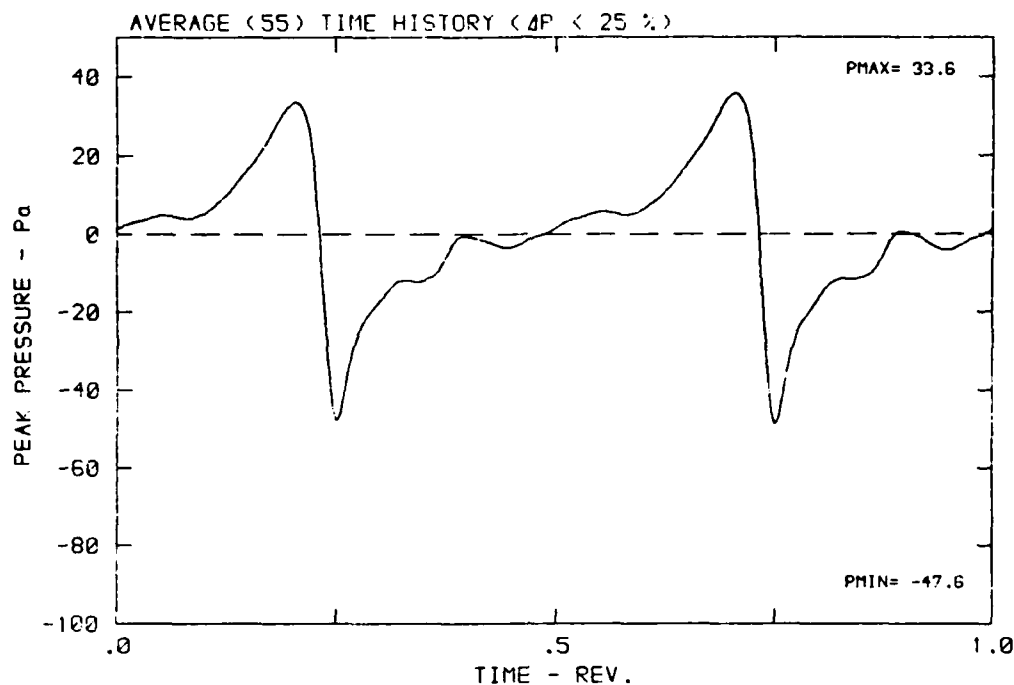




XEROCOPY RESOLUTION TEST CHART

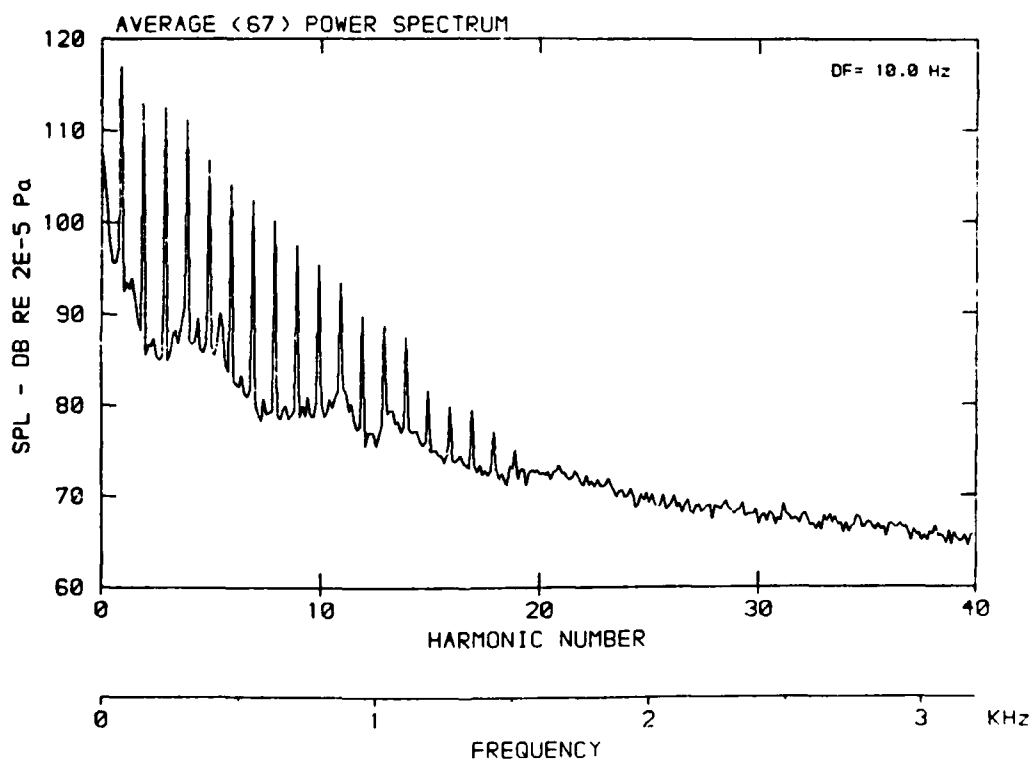
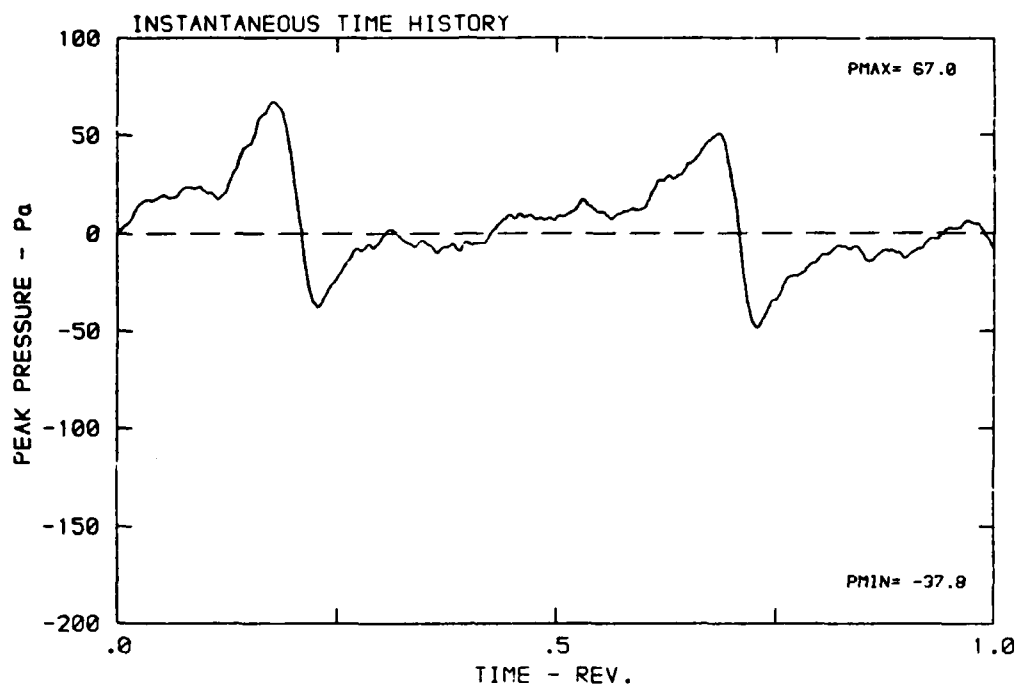
DATA POINT: FNC-6 RUN: 173 MP: 3

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



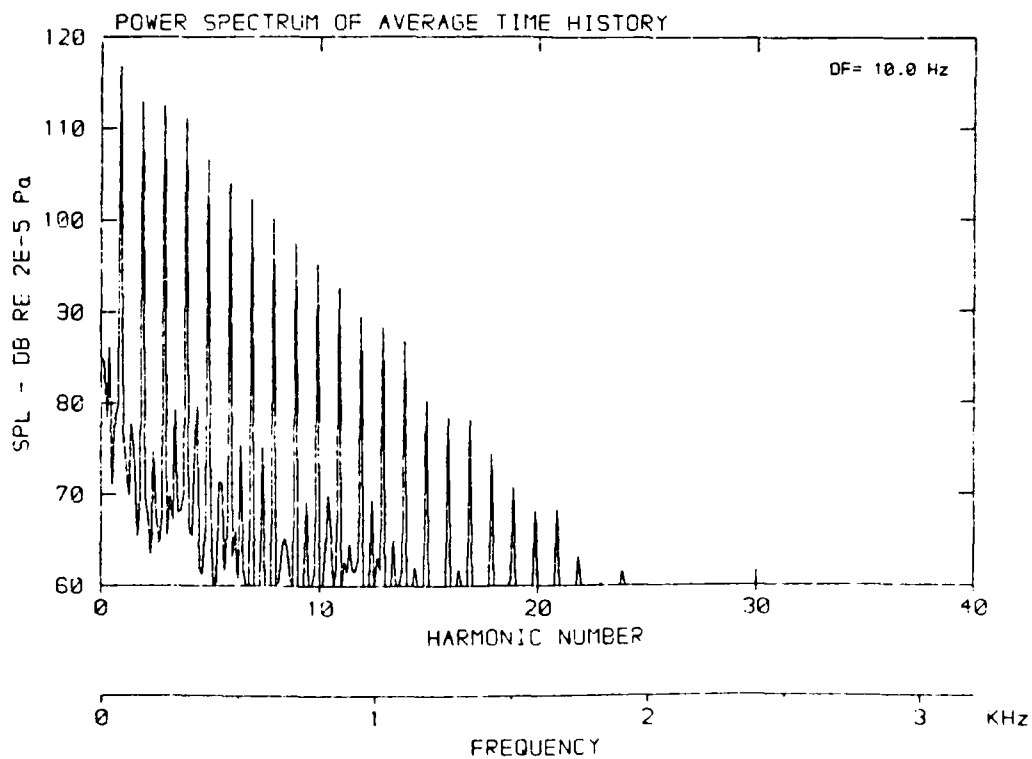
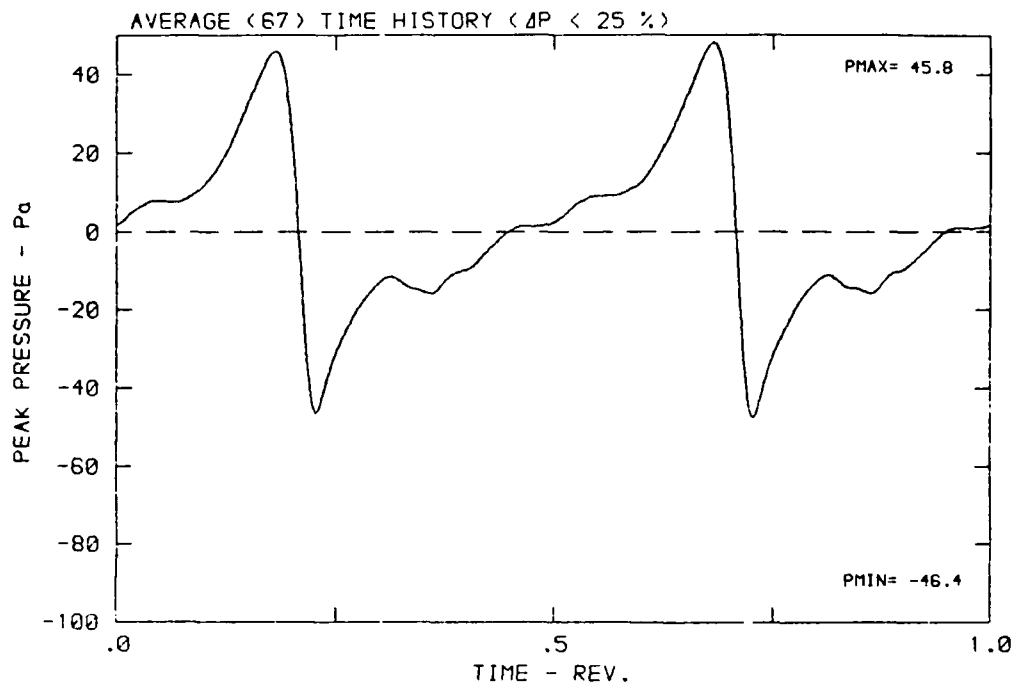
DATA POINT: FNC-6 RUN: 173 MP: 4

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



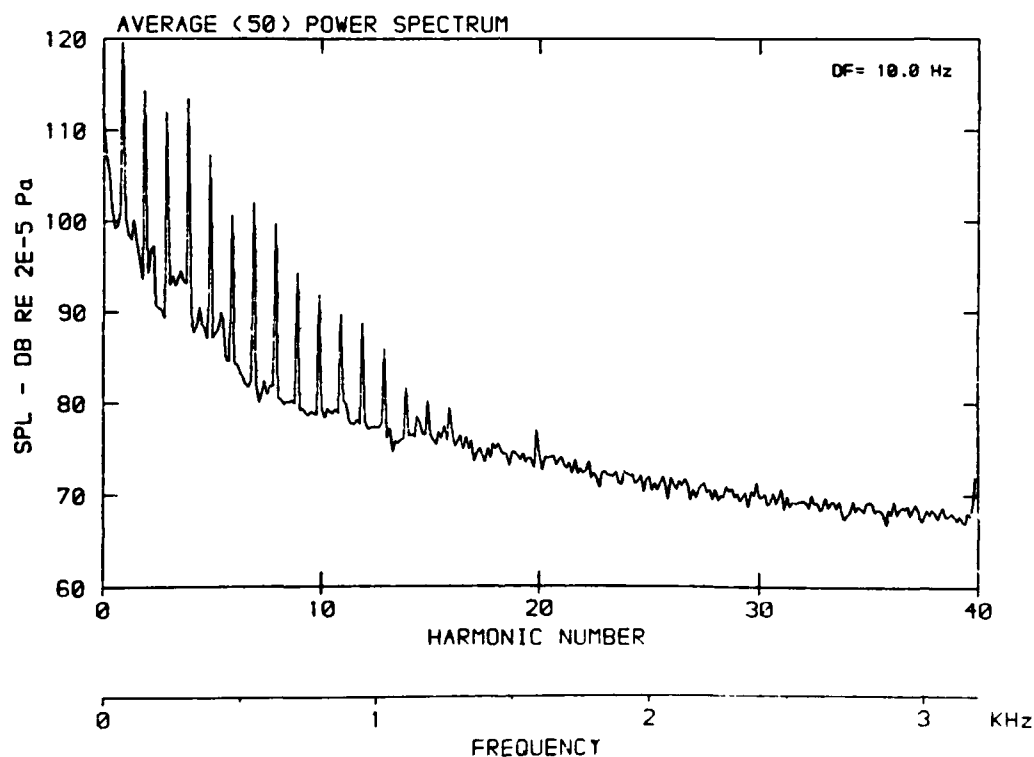
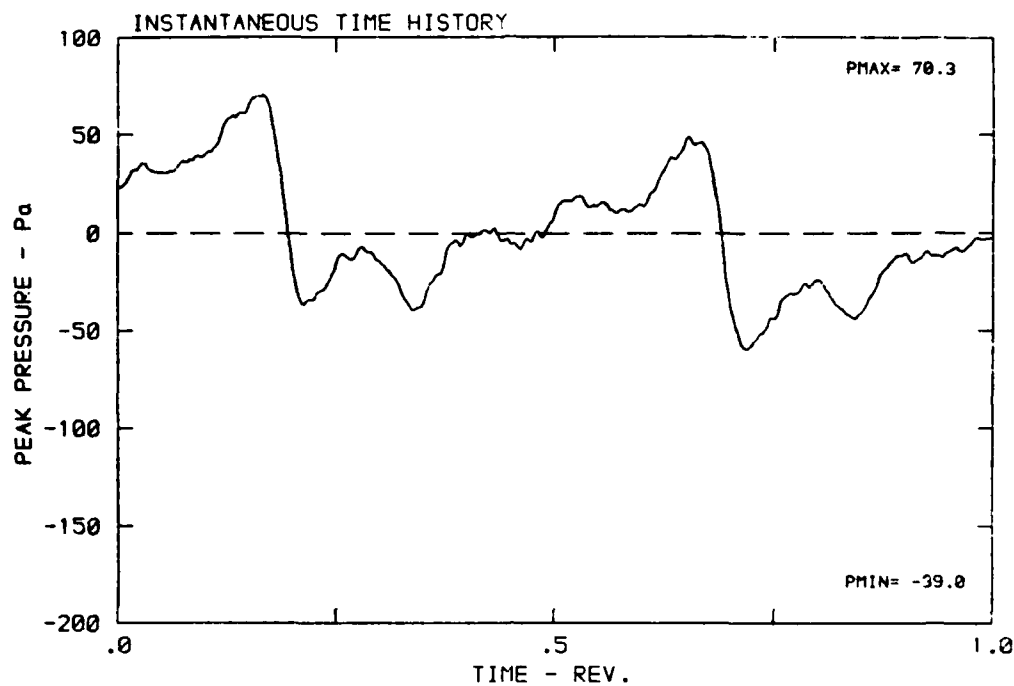
DATA POINT: FNC-6 RUN: 173 MP: 4

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



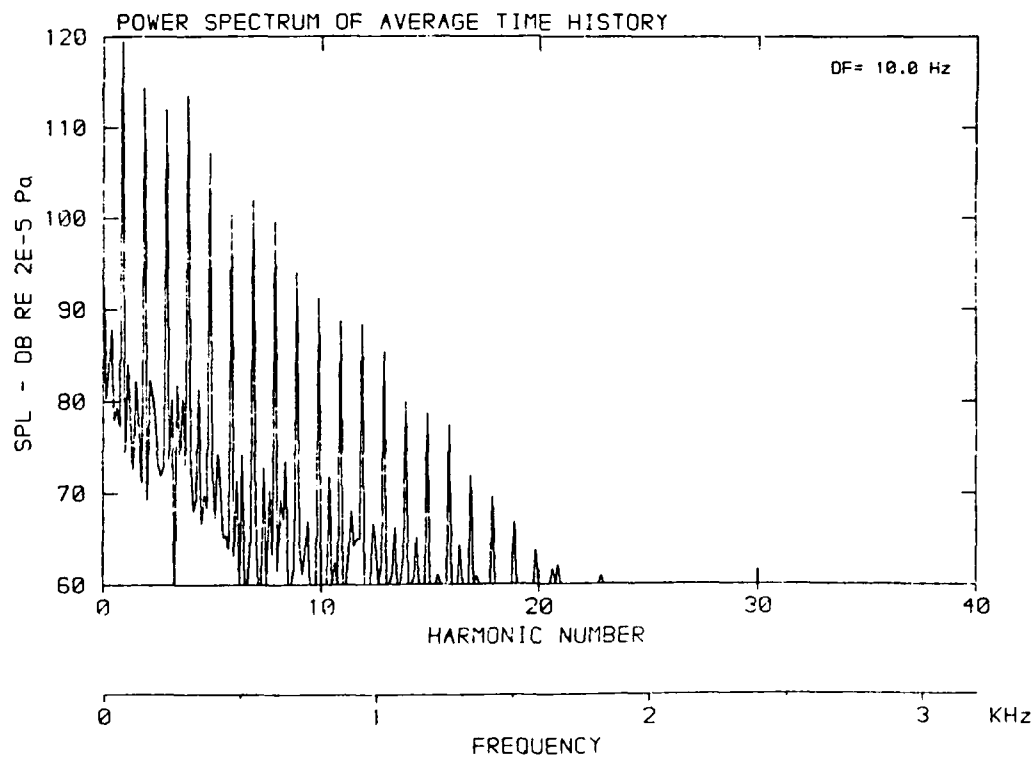
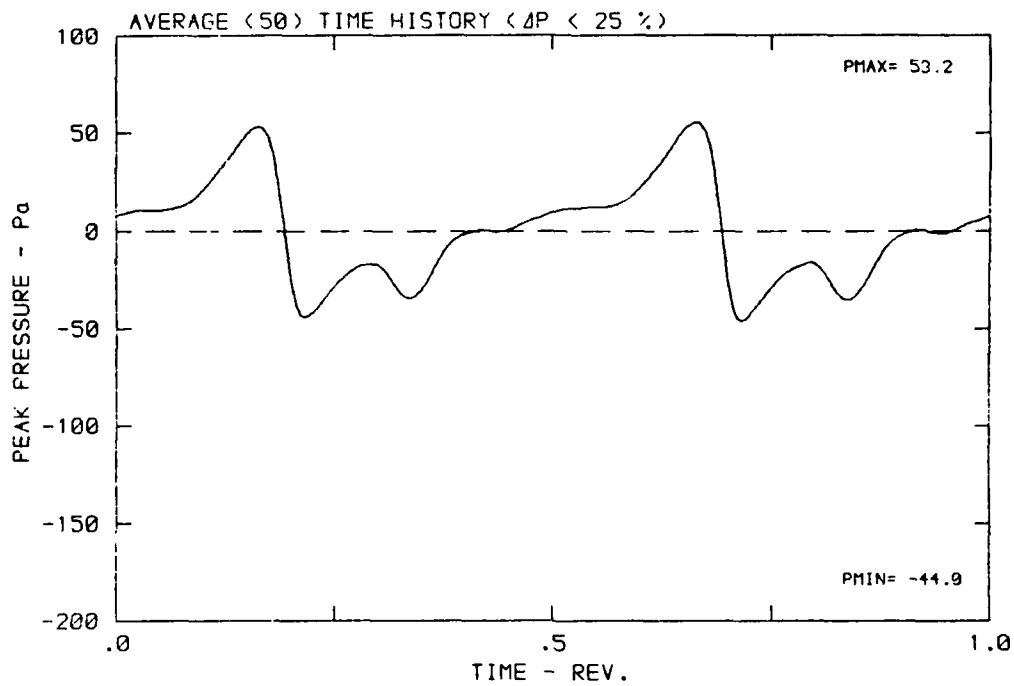
DATA POINT: FNC-6 RUN: 173 MP: 5

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



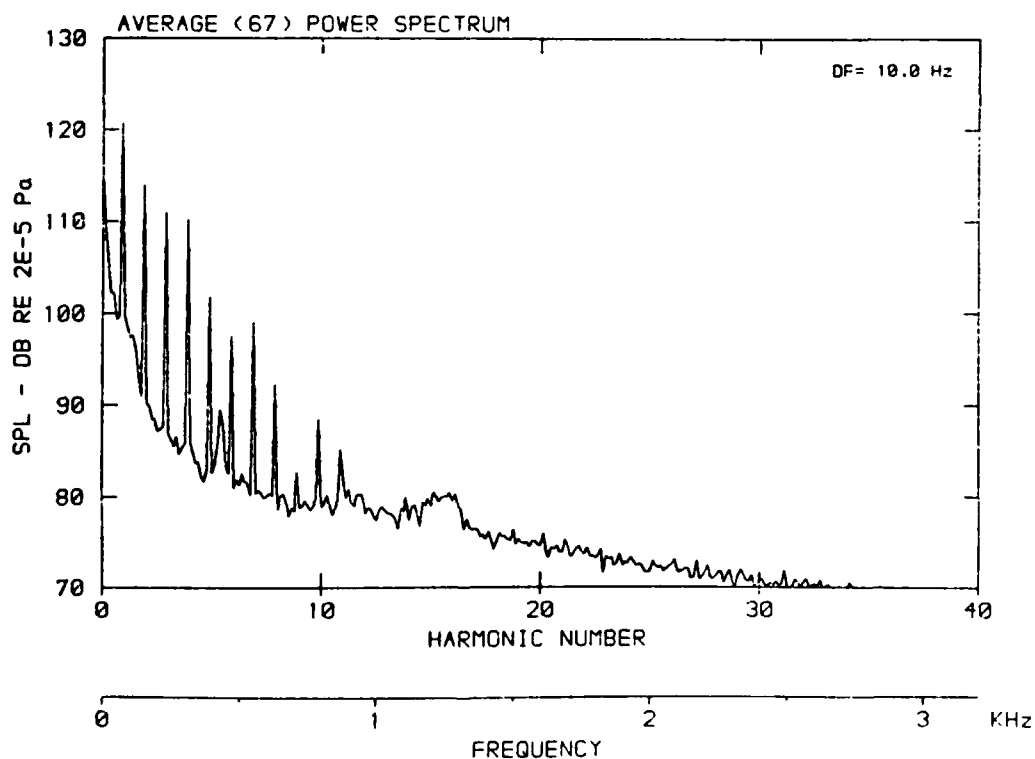
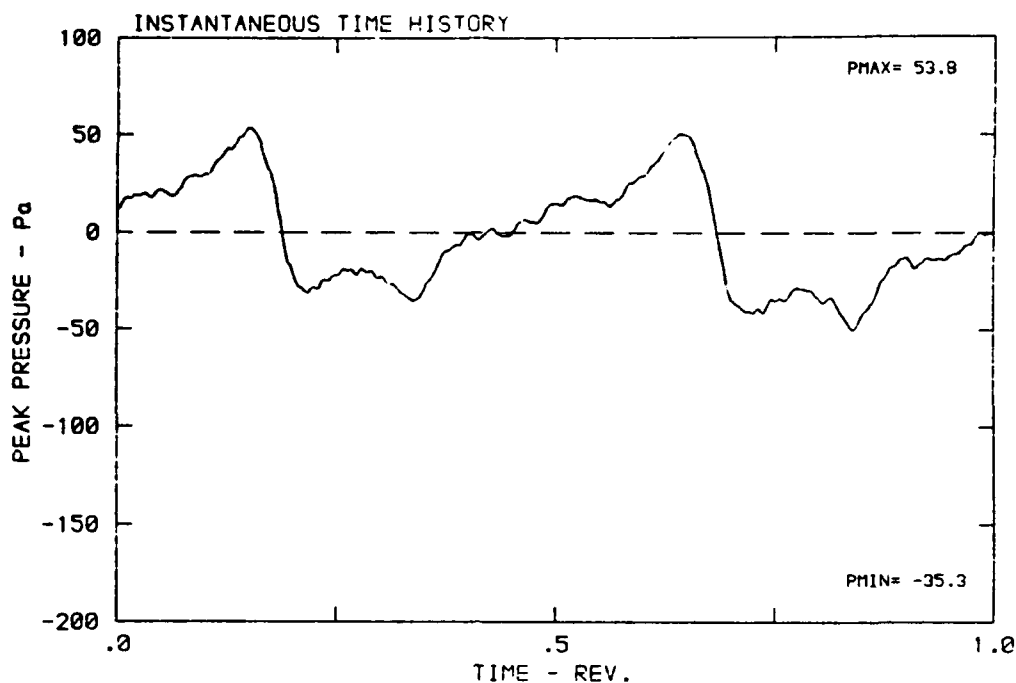
DATA POINT: FNC-6 RUN: 173 MP: 5

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



DATA POINT: FNC-6 RUN: 173 MP: 6

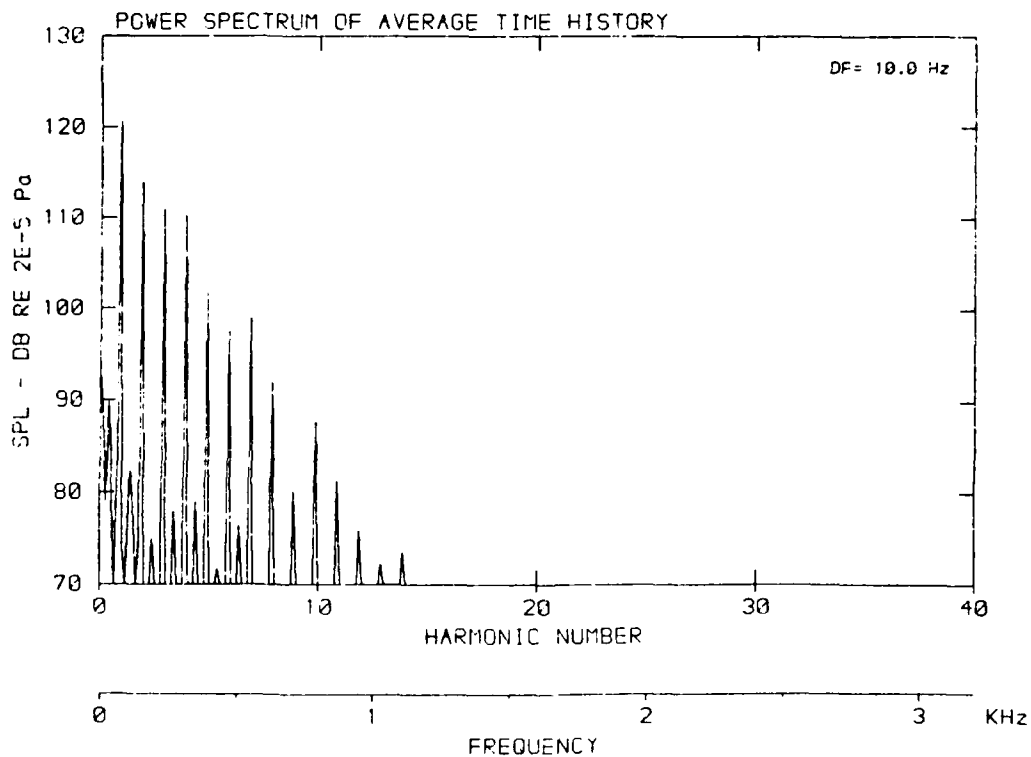
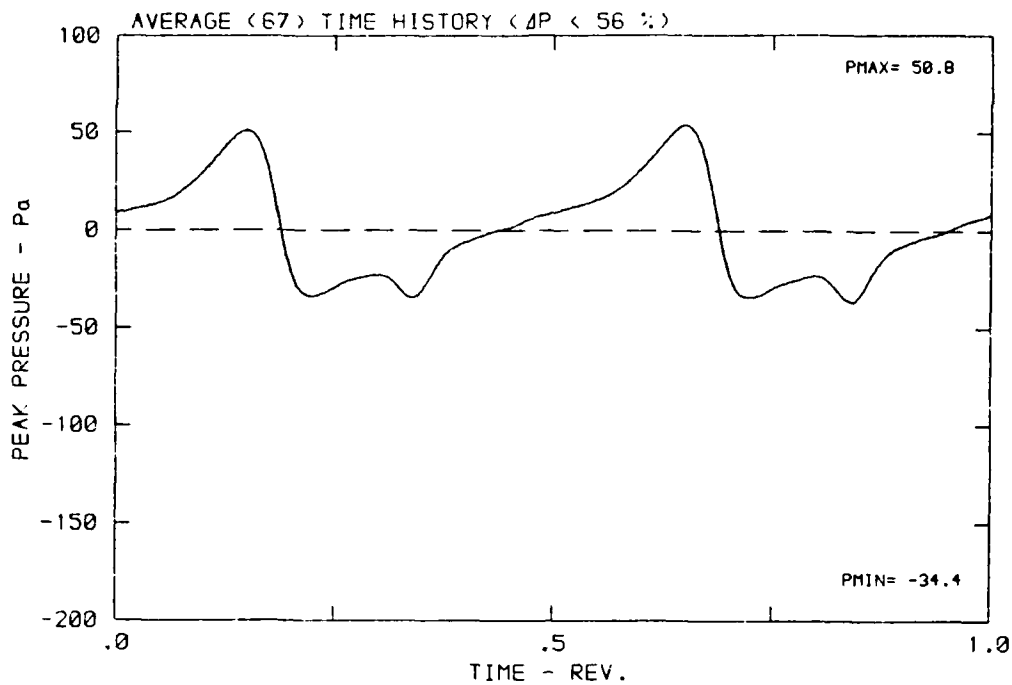
$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K





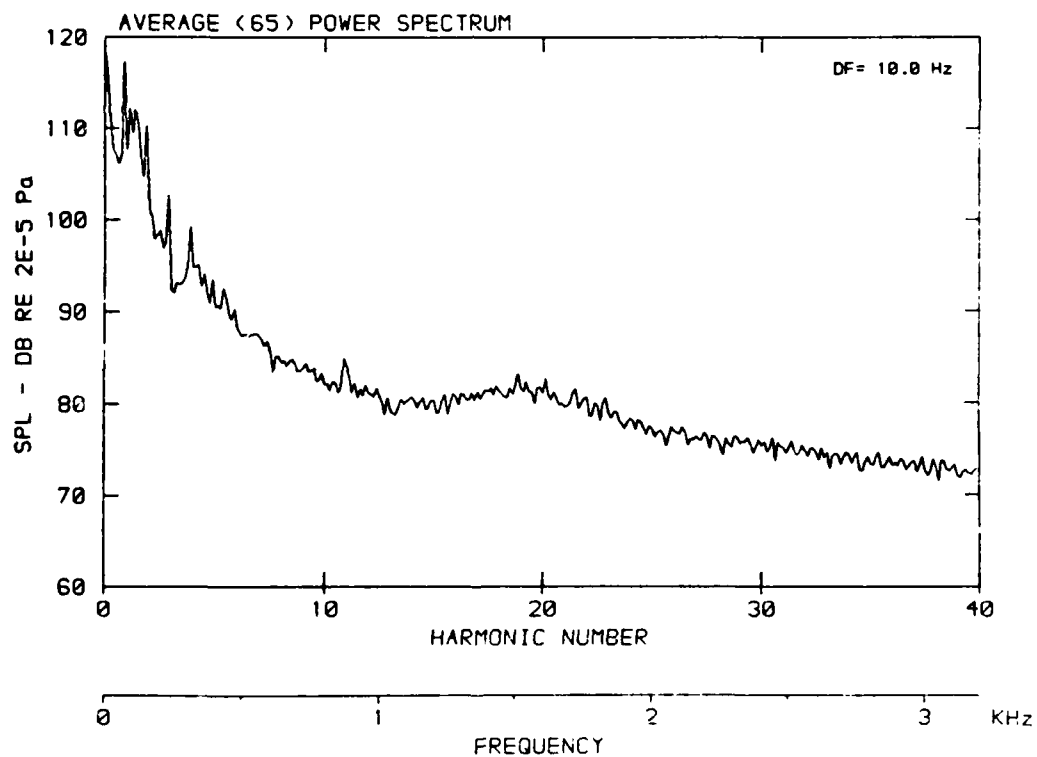
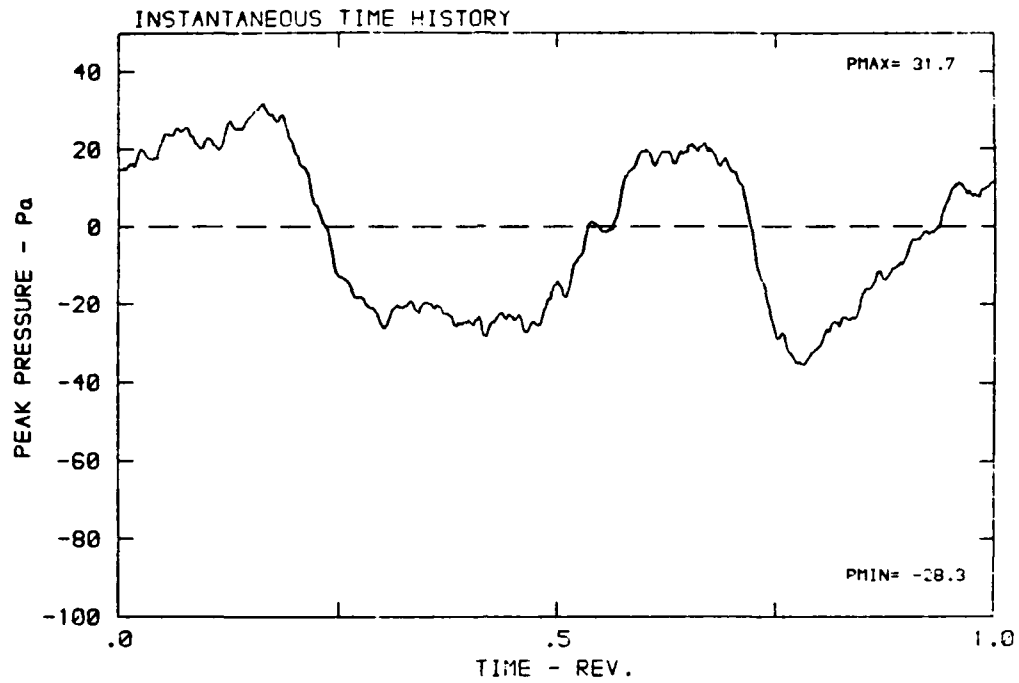
DATA POINT: FNC-6 RUN: 173 MP: 6

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



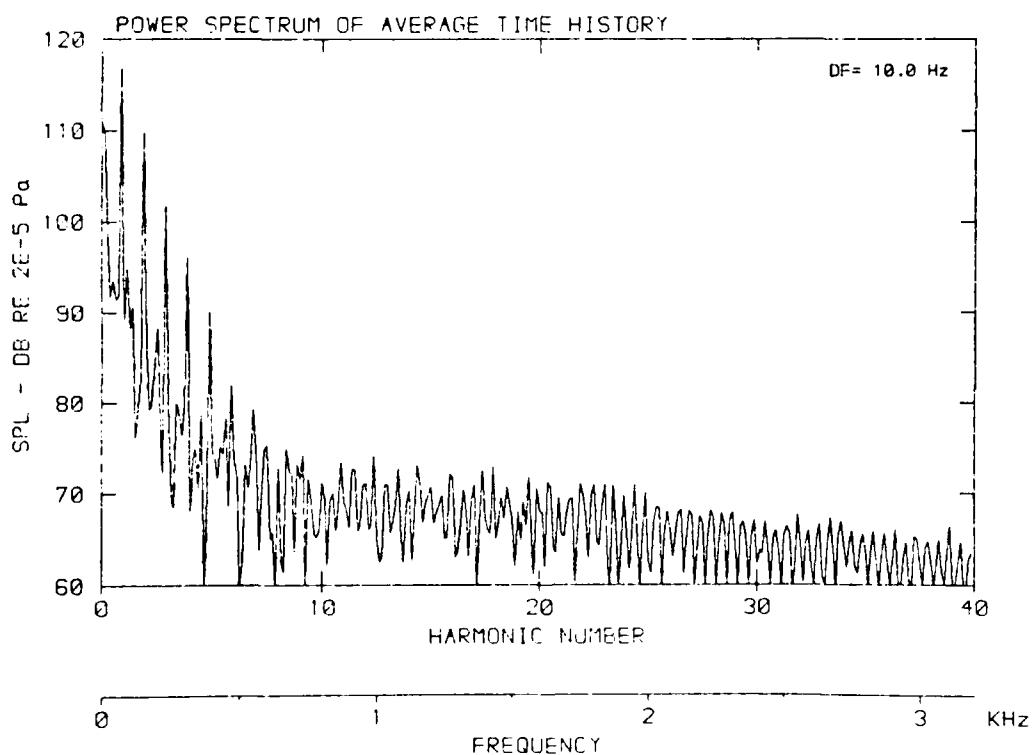
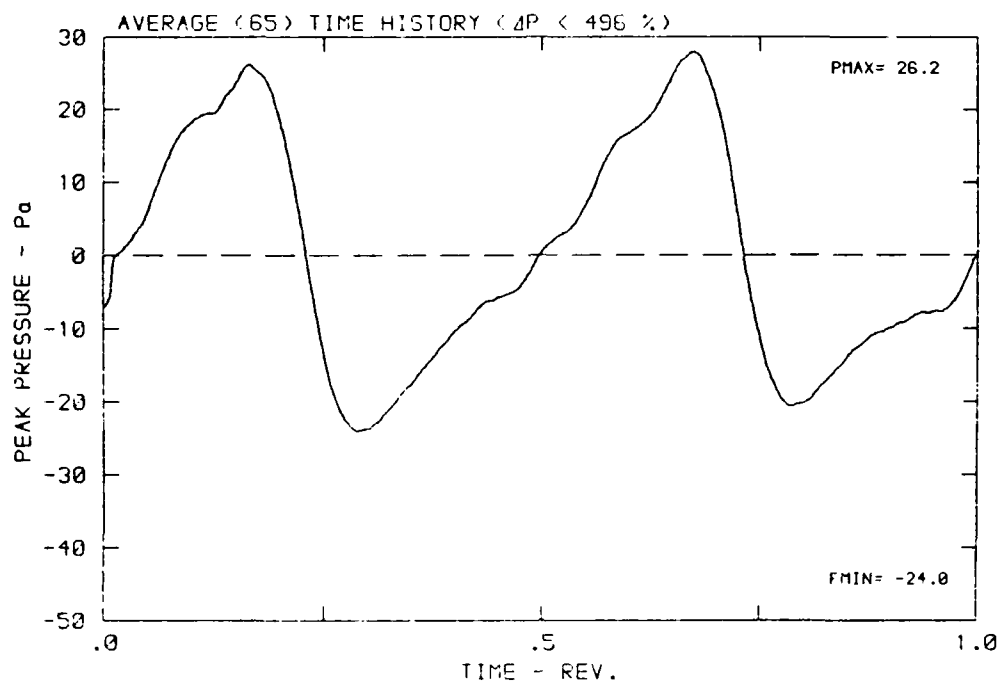
DATA POINT: FNC-6 RUN: 173 MP: 7

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .26+  $\phi$ : 3.6° T: 296.6 K



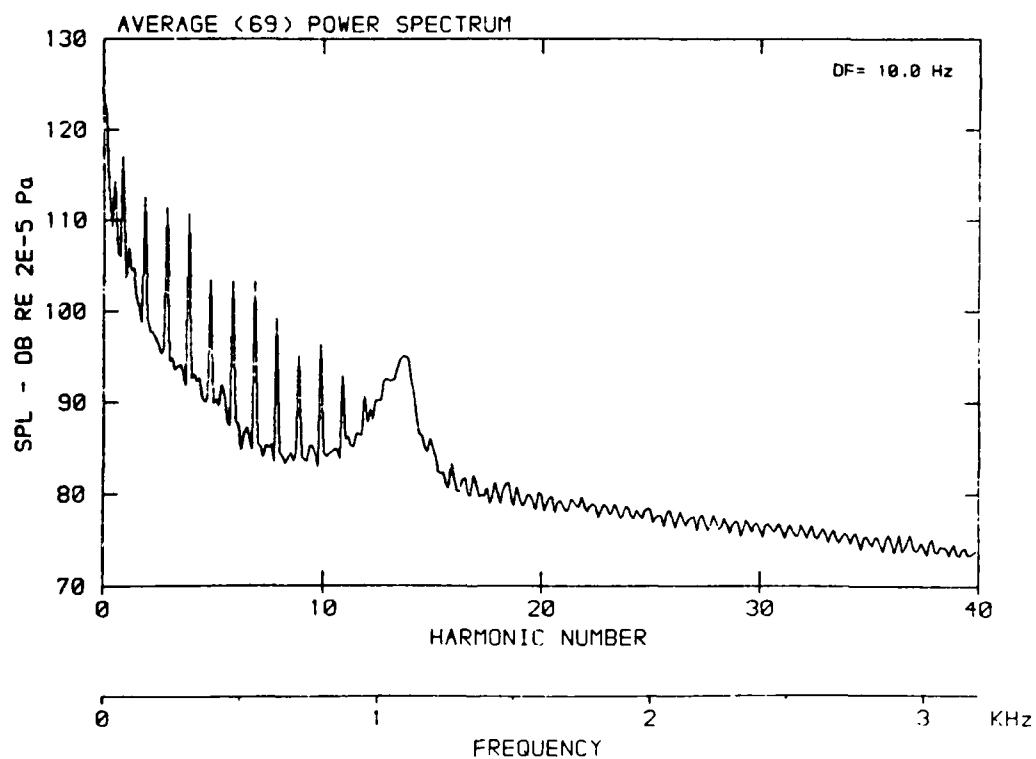
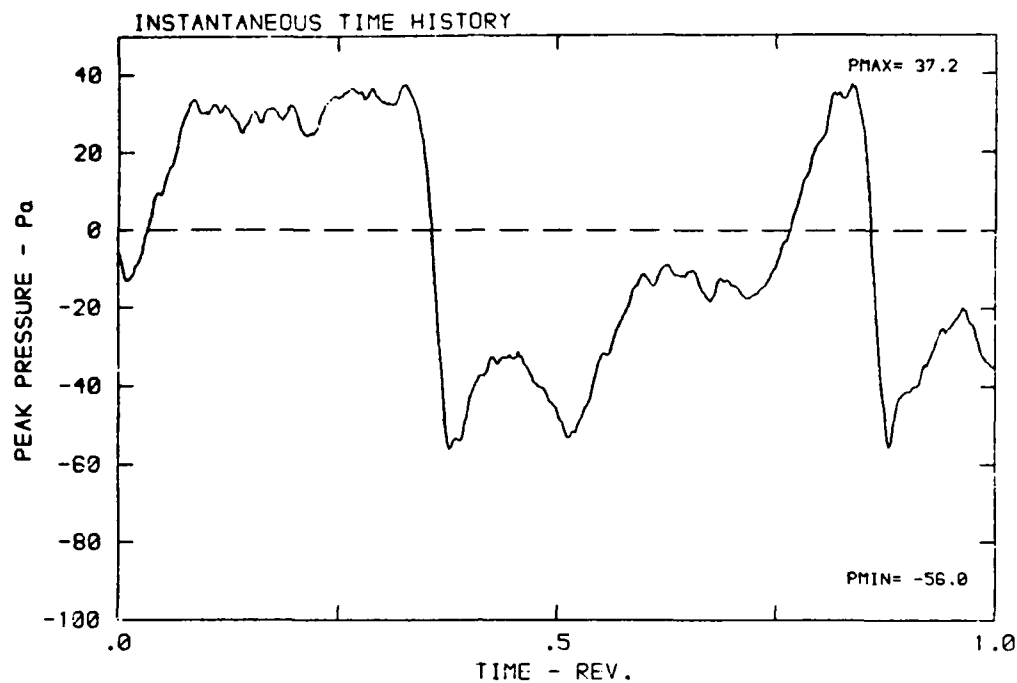
DATA POINT: FNC-6 RUN: 173 MP: 7

$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



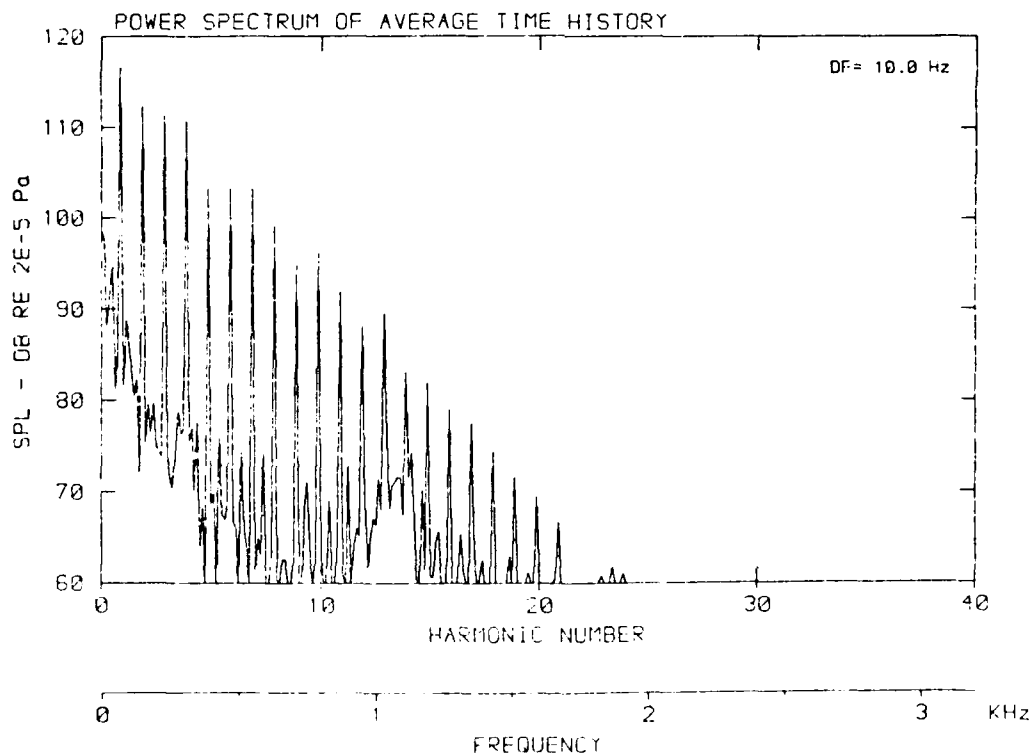
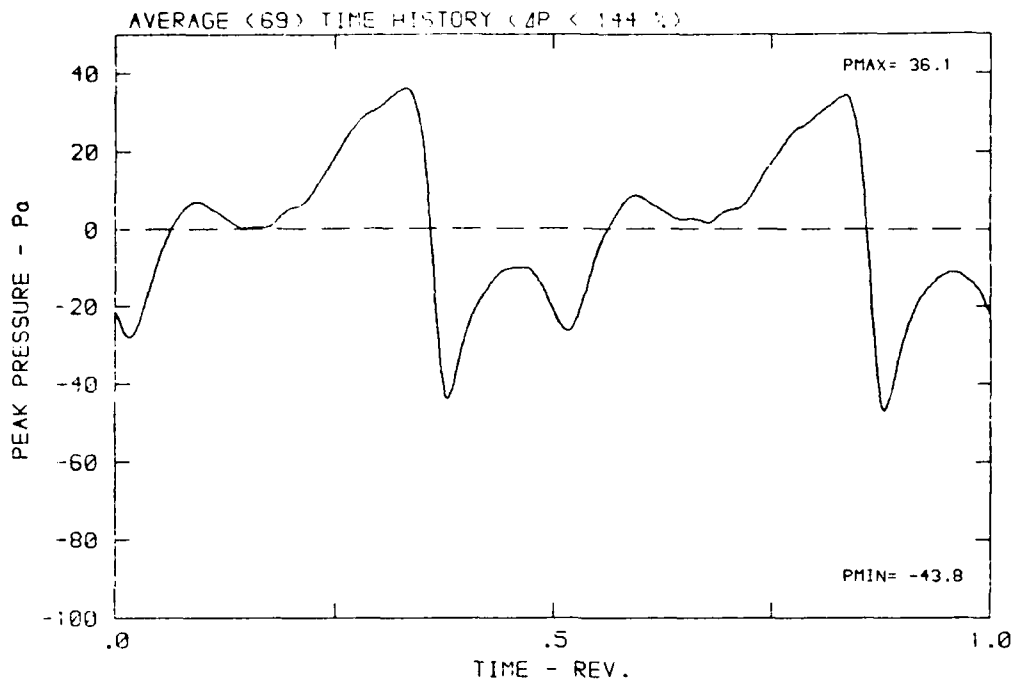
DATA POINT: FNC-6 RUN: 173 MP: 9

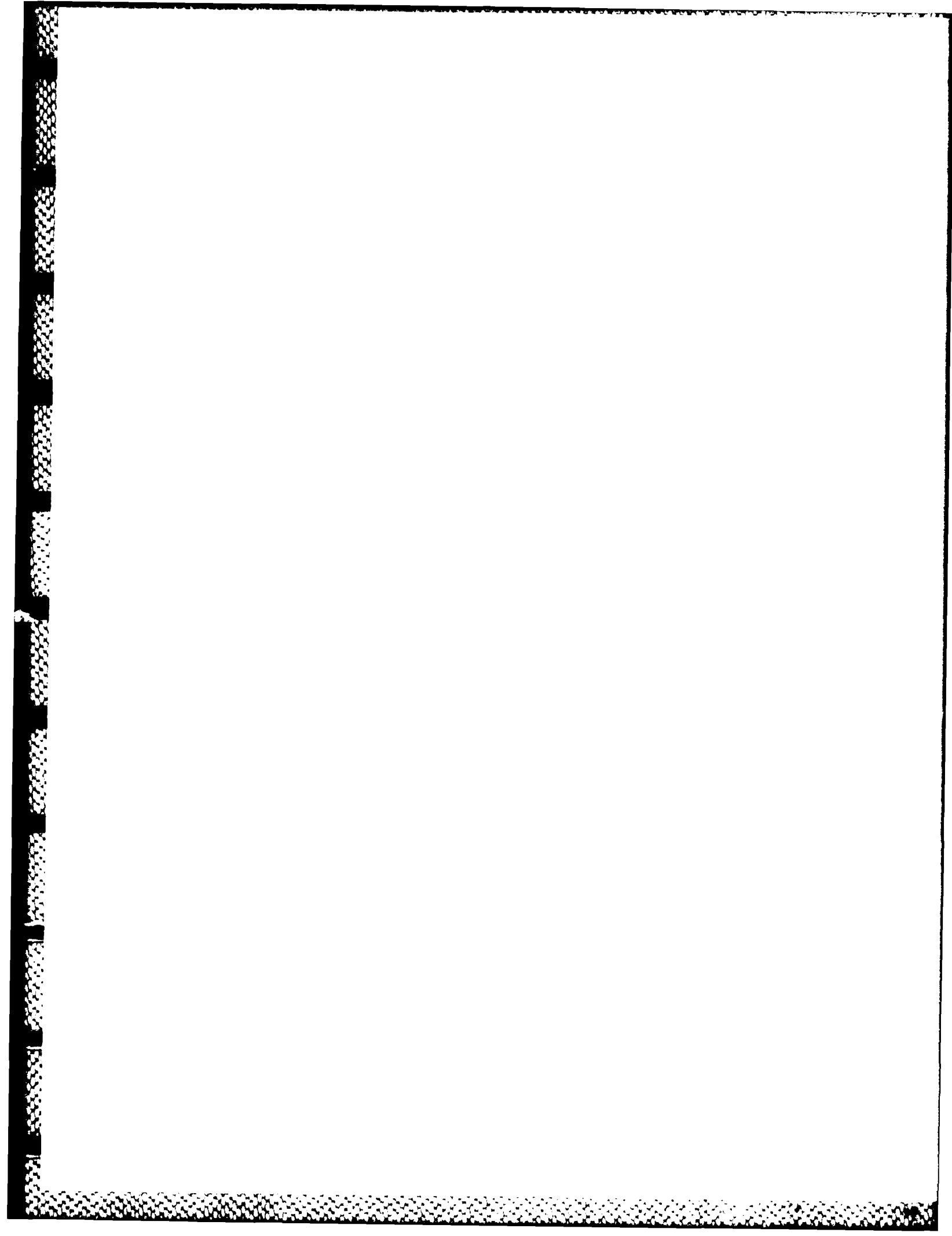
$\beta$ : 23.7° MH: .7781 n: 2400 rpm v/u: .264  $\phi$ : 3.6° T: 286.6 K



DATA POINT: FNC-6 RUN: 173 MP: 9

$\beta$ : 23.7° MH: .7781 n: 2400 rpm  $v_{tu}$ : .264  $\phi$ : 3.6° T: 286.6 K





## 6. Propeller Rotational Harmonic Noise- and Overall Noise Levels

From all spectra of averaged time-histories the harmonic pressure levels are determined under the presupposition of a 10 dB signal-to-noise ratio, and are submitted to the A-weighting function. Both linear and A-weighted harmonic levels as well as the respective overall pressure levels (calculated from the energy sum of harmonic levels) are listed in the following tables.

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 1 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |             |       |       |  |
|------------------|--------|-------|------|-------------|-------|------|-------------|-------|-------|--|
| FNC-7 / 179      |        |       |      | FNC-8 / 180 |       |      | FNC-9 / 181 |       |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F           | SPL   | SPLA  |  |
| 1                | 70.0   | 98.8  | 72.6 | 80.0        | 102.6 | 80.1 | 90.0        | 110.2 | 91.1  |  |
| 2                | 140.0  | 91.7  | 75.6 | 160.0       | 102.5 | 89.1 | 180.0       | 106.6 | 95.7  |  |
| 3                | 210.0  | 91.0  | 80.1 | 240.0       | 99.0  | 90.4 | 270.0       | 107.8 | 99.2  |  |
| 4                | 280.0  | 84.6  | 76.0 | 320.0       | 96.4  | 89.8 | 360.0       | 106.0 | 101.2 |  |
| 5                | 350.0  | 79.3  | 72.7 | 400.0       | 94.7  | 89.9 | 450.0       | 103.9 | 100.7 |  |
| 6                | 420.0  | 72.1  | 67.3 | 480.0       | 86.1  | 82.9 | 540.0       | 98.8  | 95.6  |  |
| 7                | 490.0  | 68.0  | 64.8 | 560.0       | 82.0  | 78.8 | 630.0       | 99.7  | 97.8  |  |
| 8                | 560.0  | 59.6  | 56.4 | 640.0       | 79.9  | 78.0 | 720.0       | 98.9  | 98.1  |  |
| 9                | 630.0  | 0.0   | 0.0  | 720.0       | 77.6  | 76.8 | 810.0       | 93.8  | 93.0  |  |
| 10               | 700.0  | 0.0   | 0.0  | 800.0       | 75.2  | 74.4 | 900.0       | 93.1  | 93.1  |  |
| 11               | 770.0  | 0.0   | 0.0  | 880.0       | 64.2  | 63.4 | 990.0       | 91.4  | 91.4  |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 0.0   | 0.0  | 1080.0      | 86.4  | 86.4  |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 0.0   | 0.0  | 1170.0      | 82.6  | 83.2  |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1260.0      | 82.4  | 83.0  |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 0.0   | 0.0  | 1350.0      | 78.9  | 79.5  |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 0.0   | 0.0  | 1440.0      | 74.5  | 75.5  |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 0.0   | 0.0  | 1530.0      | 80.1  | 81.1  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 0.0   | 0.0  | 1620.0      | 73.6  | 74.6  |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 0.0   | 0.0  | 1710.0      | 63.5  | 64.5  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0  | 1800.0      | 0.0   | 0.0   |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0   |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0  | 1980.0      | 0.0   | 0.0   |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0  | 2070.0      | 0.0   | 0.0   |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0  | 2250.0      | 0.0   | 0.0   |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0  | 2340.0      | 0.0   | 0.0   |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0  | 2430.0      | 0.0   | 0.0   |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0   |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0  | 2610.0      | 0.0   | 0.0   |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0  | 2700.0      | 0.0   | 0.0   |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0  | 2790.0      | 0.0   | 0.0   |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0  | 2970.0      | 0.0   | 0.0   |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0  | 3060.0      | 0.0   | 0.0   |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3150.0      | 0.0   | 0.0   |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0  | 3240.0      | 0.0   | 0.0   |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0  | 3330.0      | 0.0   | 0.0   |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0  | 3420.0      | 0.0   | 0.0   |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0  | 3510.0      | 0.0   | 0.0   |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0  | 3600.0      | 0.0   | 0.0   |  |
| OASPL            |        | 100.3 | 83.5 | 107.2       |       | 96.4 | 114.8       |       | 107.8 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA



# DNW PROPELLER NOISE TEST

MICROPHONE: MP 2 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |             |       |       |       |       |
|------------------|--------|-------|------|-------------|-------|-------|-------------|-------|-------|-------|-------|
| FNC-7 / 179      |        |       |      | FNC-8 / 180 |       |       | FNC-9 / 181 |       |       |       |       |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F           | SPL   | SPLA  |       |       |
| 1                | 70.0   | 104.2 | 78.0 | 80.0        | 105.5 | 83.0  | 90.0        | 112.6 | 93.5  |       |       |
| 2                | 140.0  | 100.3 | 84.2 | 160.0       | 107.2 | 93.8  | 180.0       | 116.6 | 105.7 |       |       |
| 3                | 210.0  | 97.0  | 86.1 | 240.0       | 103.7 | 95.1  | 270.0       | 109.8 | 101.2 |       |       |
| 4                | 280.0  | 91.2  | 82.6 | 320.0       | 99.9  | 93.3  | 360.0       | 111.8 | 107.0 |       |       |
| 5                | 350.0  | 86.9  | 80.3 | 400.0       | 98.2  | 93.4  | 450.0       | 111.6 | 108.4 |       |       |
| 6                | 420.0  | 84.0  | 79.2 | 480.0       | 99.2  | 96.0  | 540.0       | 111.5 | 108.3 |       |       |
| 7                | 490.0  | 80.1  | 76.9 | 560.0       | 95.8  | 92.6  | 630.0       | 109.0 | 107.1 |       |       |
| 8                | 560.0  | 73.7  | 70.5 | 640.0       | 92.3  | 90.4  | 720.0       | 105.2 | 104.4 |       |       |
| 9                | 630.0  | 68.1  | 66.2 | 720.0       | 87.2  | 86.4  | 810.0       | 106.1 | 105.3 |       |       |
| 10               | 700.0  | 60.7  | 58.8 | 800.0       | 85.8  | 85.0  | 900.0       | 105.9 | 105.9 |       |       |
| 11               | 770.0  | 0.0   | 0.0  | 880.0       | 84.3  | 83.5  | 990.0       | 102.7 | 102.7 |       |       |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 79.7  | 79.7  | 1080.0      | 101.1 | 101.1 |       |       |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 76.4  | 76.4  | 1170.0      | 101.4 | 102.0 |       |       |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 73.3  | 73.3  | 1260.0      | 99.3  | 99.9  |       |       |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 70.9  | 71.5  | 1350.0      | 97.9  | 98.5  |       |       |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 68.3  | 68.9  | 1440.0      | 95.0  | 96.0  |       |       |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 64.9  | 65.5  | 1530.0      | 93.1  | 94.1  |       |       |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 59.0  | 60.0  | 1620.0      | 92.6  | 93.6  |       |       |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 0.0   | 0.0   | 1710.0      | 90.1  | 91.1  |       |       |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0   | 1800.0      | 87.7  | 88.9  |       |       |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   | 1890.0      | 85.5  | 86.7  |       |       |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0   | 1980.0      | 86.3  | 87.5  |       |       |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0      | 82.8  | 84.0  |       |       |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0      | 81.0  | 82.2  |       |       |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0      | 79.3  | 80.6  |       |       |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0      | 79.0  | 80.3  |       |       |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0      | 75.9  | 77.2  |       |       |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0      | 73.8  | 75.1  |       |       |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0      | 73.8  | 75.1  |       |       |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0      | 73.3  | 74.6  |       |       |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0      | 66.3  | 67.6  |       |       |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0      | 0.0   | 0.0   |       |       |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0      | 0.0   | 0.0   |       |       |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0      | 0.0   | 0.0   |       |       |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0      | 0.0   | 0.0   |       |       |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0      | 0.0   | 0.0   |       |       |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0      | 0.0   | 0.0   |       |       |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0      | 0.0   | 0.0   |       |       |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0      | 0.0   | 0.0   |       |       |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0      | 0.0   | 0.0   |       |       |
| OASPL            |        | 106.5 | 90.7 |             |       | 111.6 | 102.6       |       |       | 121.6 | 116.7 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 3 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |             |       |       |  |
|------------------|--------|-------|------|-------------|-------|-------|-------------|-------|-------|--|
| FNC-7 / 179      |        |       |      | FNC-8 / 180 |       |       | FNC-9 / 181 |       |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F           | SPL   | SPLA  |  |
| 1                | 70.0   | 106.5 | 80.3 | 80.0        | 110.3 | 87.8  | 90.0        | 112.5 | 93.4  |  |
| 2                | 140.0  | 102.4 | 86.3 | 160.0       | 108.4 | 95.0  | 180.0       | 112.9 | 102.0 |  |
| 3                | 210.0  | 97.8  | 86.9 | 240.0       | 107.2 | 98.6  | 270.0       | 112.1 | 103.5 |  |
| 4                | 280.0  | 93.3  | 84.7 | 320.0       | 102.7 | 96.1  | 360.0       | 112.7 | 107.9 |  |
| 5                | 350.0  | 90.4  | 83.8 | 400.0       | 103.1 | 98.3  | 450.0       | 113.1 | 109.9 |  |
| 6                | 420.0  | 87.4  | 82.6 | 480.0       | 100.3 | 97.1  | 540.0       | 109.7 | 106.5 |  |
| 7                | 490.0  | 80.3  | 77.1 | 560.0       | 95.5  | 92.3  | 630.0       | 111.2 | 109.3 |  |
| 8                | 560.0  | 75.4  | 72.2 | 640.0       | 95.6  | 93.7  | 720.0       | 110.8 | 110.0 |  |
| 9                | 630.0  | 74.5  | 72.6 | 720.0       | 93.2  | 92.4  | 810.0       | 109.3 | 108.5 |  |
| 10               | 700.0  | 72.0  | 70.1 | 800.0       | 90.2  | 89.4  | 900.0       | 108.0 | 108.0 |  |
| 11               | 770.0  | 65.0  | 64.2 | 880.0       | 86.6  | 85.8  | 990.0       | 107.6 | 107.6 |  |
| 12               | 840.0  | 60.8  | 60.0 | 960.0       | 85.2  | 85.2  | 1080.0      | 105.4 | 105.4 |  |
| 13               | 910.0  | 52.9  | 52.9 | 1040.0      | 82.2  | 82.2  | 1170.0      | 102.1 | 102.7 |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 77.9  | 77.9  | 1260.0      | 104.0 | 104.6 |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 75.2  | 75.8  | 1350.0      | 102.1 | 102.7 |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 76.0  | 76.6  | 1440.0      | 99.5  | 100.5 |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 73.4  | 74.0  | 1530.0      | 97.9  | 98.9  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 70.4  | 71.4  | 1620.0      | 99.0  | 100.0 |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 69.5  | 70.5  | 1710.0      | 96.4  | 97.4  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 68.6  | 69.6  | 1800.0      | 91.9  | 93.1  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 68.2  | 69.2  | 1890.0      | 92.6  | 93.8  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 65.7  | 66.7  | 1980.0      | 92.0  | 93.2  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 66.1  | 67.3  | 2070.0      | 88.9  | 90.1  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 64.8  | 66.0  | 2160.0      | 87.0  | 88.2  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 64.6  | 65.8  | 2250.0      | 88.1  | 89.4  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 62.1  | 63.3  | 2340.0      | 85.0  | 86.3  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 62.7  | 63.9  | 2430.0      | 82.8  | 84.1  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 62.0  | 63.3  | 2520.0      | 82.6  | 83.9  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 62.0  | 63.3  | 2610.0      | 82.1  | 83.4  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 62.0  | 63.3  | 2700.0      | 78.9  | 80.2  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 60.9  | 62.2  | 2790.0      | 77.7  | 79.0  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 61.9  | 63.2  | 2880.0      | 78.5  | 79.7  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 60.9  | 62.2  | 2970.0      | 76.4  | 77.6  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 60.3  | 61.6  | 3060.0      | 75.4  | 76.6  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 59.5  | 60.8  | 3150.0      | 73.3  | 74.5  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 59.8  | 61.0  | 3240.0      | 71.3  | 72.5  |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 59.2  | 60.4  | 3330.0      | 73.2  | 74.4  |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 58.8  | 60.0  | 3420.0      | 70.4  | 71.6  |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 58.3  | 59.5  | 3510.0      | 67.7  | 68.9  |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 58.1  | 59.3  | 3600.0      | 68.6  | 69.6  |  |
| OASPL            |        | 108.6 | 92.7 | 114.6       |       | 105.4 | 122.1       |       | 118.9 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 4 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |        |             |       |  |
|------------------|--------|-------|------|-------------|-------|-------|--------|-------------|-------|--|
| FNC-7 / 179      |        |       |      | FNC-8 / 180 |       |       |        | FNC-9 / 181 |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F      | SPL         | SPLA  |  |
| 1                | 70.0   | 108.5 | 82.3 | 80.0        | 113.9 | 91.4  | 90.0   | 114.0       | 94.9  |  |
| 2                | 140.0  | 104.0 | 87.9 | 160.0       | 109.2 | 95.8  | 180.0  | 113.2       | 102.3 |  |
| 3                | 210.0  | 98.0  | 87.1 | 240.0       | 109.3 | 100.7 | 270.0  | 114.6       | 106.0 |  |
| 4                | 280.0  | 96.1  | 87.5 | 320.0       | 106.9 | 100.3 | 360.0  | 114.5       | 109.7 |  |
| 5                | 350.0  | 91.4  | 84.8 | 400.0       | 103.1 | 98.3  | 450.0  | 112.9       | 109.7 |  |
| 6                | 420.0  | 86.5  | 81.7 | 480.0       | 101.2 | 98.0  | 540.0  | 111.0       | 107.8 |  |
| 7                | 490.0  | 82.3  | 79.1 | 560.0       | 99.5  | 96.3  | 630.0  | 112.0       | 110.1 |  |
| 8                | 560.0  | 79.5  | 76.3 | 640.0       | 97.7  | 95.8  | 720.0  | 109.6       | 108.8 |  |
| 9                | 630.0  | 75.5  | 73.6 | 720.0       | 93.5  | 92.7  | 810.0  | 109.3       | 108.5 |  |
| 10               | 700.0  | 69.2  | 67.3 | 800.0       | 92.2  | 91.4  | 900.0  | 108.3       | 108.3 |  |
| 11               | 770.0  | 64.2  | 63.4 | 880.0       | 89.5  | 88.7  | 990.0  | 107.1       | 107.1 |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 84.8  | 84.8  | 1080.0 | 106.4       | 106.4 |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 83.8  | 83.8  | 1170.0 | 105.6       | 106.2 |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 81.9  | 81.9  | 1260.0 | 102.1       | 102.7 |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 77.5  | 78.1  | 1350.0 | 102.8       | 103.4 |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 72.9  | 73.5  | 1440.0 | 101.5       | 102.5 |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 73.4  | 74.0  | 1530.0 | 98.7        | 99.7  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 70.0  | 71.0  | 1620.0 | 97.1        | 98.1  |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 65.3  | 66.3  | 1710.0 | 97.3        | 98.3  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 62.5  | 63.5  | 1800.0 | 95.5        | 96.7  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 61.4  | 62.4  | 1890.0 | 92.5        | 93.7  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 61.1  | 62.1  | 1980.0 | 91.6        | 92.8  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 58.5  | 59.7  | 2070.0 | 89.9        | 91.1  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0 | 87.7        | 88.9  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0 | 87.2        | 88.5  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0 | 85.2        | 86.5  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0 | 84.4        | 85.7  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0 | 82.9        | 84.2  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0 | 82.7        | 84.0  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0 | 80.6        | 81.9  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0 | 79.6        | 80.9  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0 | 79.2        | 80.4  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0 | 76.7        | 77.9  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0 | 74.7        | 75.9  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0 | 76.0        | 77.2  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0 | 73.3        | 74.5  |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0 | 72.5        | 73.7  |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0 | 72.6        | 73.8  |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0 | 70.8        | 72.0  |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0 | 69.9        | 70.9  |  |
| OASPL            |        | 110.3 | 93.9 |             | 117.1 | 107.3 |        | 122.9       | 119.3 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 5 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |             |       |       |  |
|------------------|--------|-------|------|-------------|-------|-------|-------------|-------|-------|--|
| FNC-7 / 179      |        |       |      | FNC-8 / 180 |       |       | FNC-9 / 181 |       |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F           | SPL   | SPLA  |  |
| 1                | 70.0   | 109.7 | 83.5 | 80.0        | 116.7 | 94.2  | 90.0        | 115.4 | 96.3  |  |
| 2                | 140.0  | 105.0 | 88.9 | 160.0       | 110.9 | 97.5  | 180.0       | 107.1 | 96.2  |  |
| 3                | 210.0  | 95.4  | 84.5 | 240.0       | 108.2 | 99.6  | 270.0       | 115.2 | 106.6 |  |
| 4                | 280.0  | 95.6  | 87.0 | 320.0       | 110.0 | 103.4 | 360.0       | 116.5 | 111.7 |  |
| 5                | 350.0  | 93.1  | 86.5 | 400.0       | 104.9 | 100.1 | 450.0       | 107.5 | 104.3 |  |
| 6                | 420.0  | 86.3  | 81.5 | 480.0       | 97.7  | 94.5  | 540.0       | 110.4 | 107.2 |  |
| 7                | 490.0  | 79.1  | 75.9 | 560.0       | 98.2  | 95.0  | 630.0       | 111.6 | 109.7 |  |
| 8                | 560.0  | 77.4  | 74.2 | 640.0       | 96.5  | 94.6  | 720.0       | 106.6 | 105.8 |  |
| 9                | 630.0  | 76.3  | 74.4 | 720.0       | 92.1  | 91.3  | 810.0       | 107.1 | 106.3 |  |
| 10               | 700.0  | 68.3  | 66.4 | 800.0       | 87.9  | 87.1  | 900.0       | 105.8 | 105.8 |  |
| 11               | 770.0  | 0.0   | 0.0  | 880.0       | 85.2  | 84.4  | 990.0       | 106.0 | 106.0 |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 84.2  | 84.2  | 1080.0      | 102.9 | 102.9 |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 82.0  | 82.0  | 1170.0      | 102.7 | 103.3 |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 76.0  | 76.0  | 1260.0      | 102.3 | 102.9 |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 74.6  | 75.2  | 1350.0      | 99.2  | 99.8  |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 73.7  | 74.3  | 1440.0      | 97.9  | 98.9  |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 64.9  | 65.5  | 1530.0      | 96.6  | 97.6  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 64.3  | 65.3  | 1620.0      | 94.3  | 95.3  |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 59.5  | 60.5  | 1710.0      | 92.7  | 93.7  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0   | 1800.0      | 92.3  | 93.5  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   | 1890.0      | 88.9  | 90.1  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0   | 1980.0      | 88.2  | 89.4  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0      | 88.4  | 89.6  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0      | 85.5  | 86.7  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0      | 83.0  | 84.3  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0      | 82.7  | 84.0  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0      | 78.7  | 80.0  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0      | 79.6  | 80.9  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0      | 74.7  | 76.0  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0      | 75.3  | 76.6  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0      | 75.0  | 76.3  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0      | 71.3  | 72.5  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0      | 71.8  | 73.0  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0      | 73.3  | 74.5  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0      | 64.6  | 65.8  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0      | 0.0   | 0.0   |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0      | 0.0   | 0.0   |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0      | 0.0   | 0.0   |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0      | 0.0   | 0.0   |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0      | 0.0   | 0.0   |  |
| OASPL            |        | 111.3 | 93.9 | 119.1       |       | 107.9 | 122.4       |       | 118.0 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 6 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |      |      |             |      |      |        |             |      |  |  |
|------------------|--------|------|------|-------------|------|------|--------|-------------|------|--|--|
| FNC-7 / 179      |        |      |      | FNC-8 / 180 |      |      |        | FNC-9 / 181 |      |  |  |
| HN               | F      | SPL  | SPLA | F           | SPL  | SPLA | F      | SPL         | SPLA |  |  |
| 1                | 70.0   | 22.9 | -3.3 | 80.0        | 47.9 | 25.4 | 90.0   | 47.3        | 28.2 |  |  |
| 2                | 140.0  | 0.0  | 0.0  | 160.0       | 0.0  | 0.0  | 180.0  | 0.0         | 0.0  |  |  |
| 3                | 210.0  | 0.0  | 0.0  | 240.0       | 0.0  | 0.0  | 270.0  | 0.0         | 0.0  |  |  |
| 4                | 280.0  | 0.0  | 0.0  | 320.0       | 0.0  | 0.0  | 360.0  | 0.0         | 0.0  |  |  |
| 5                | 350.0  | 0.0  | 0.0  | 400.0       | 0.0  | 0.0  | 450.0  | 0.0         | 0.0  |  |  |
| 6                | 420.0  | 0.0  | 0.0  | 480.0       | 0.0  | 0.0  | 540.0  | 0.0         | 0.0  |  |  |
| 7                | 490.0  | 0.0  | 0.0  | 560.0       | 0.0  | 0.0  | 630.0  | 0.0         | 0.0  |  |  |
| 8                | 560.0  | 0.0  | 0.0  | 640.0       | 0.0  | 0.0  | 720.0  | 0.0         | 0.0  |  |  |
| 9                | 630.0  | 0.0  | 0.0  | 720.0       | 0.0  | 0.0  | 810.0  | 0.0         | 0.0  |  |  |
| 10               | 700.0  | 0.0  | 0.0  | 800.0       | 0.0  | 0.0  | 900.0  | 0.0         | 0.0  |  |  |
| 11               | 770.0  | 0.0  | 0.0  | 880.0       | 0.0  | 0.0  | 990.0  | 0.0         | 0.0  |  |  |
| 12               | 840.0  | 0.0  | 0.0  | 960.0       | 0.0  | 0.0  | 1080.0 | 0.0         | 0.0  |  |  |
| 13               | 910.0  | 0.0  | 0.0  | 1040.0      | 0.0  | 0.0  | 1170.0 | 0.0         | 0.0  |  |  |
| 14               | 980.0  | 0.0  | 0.0  | 1120.0      | 0.0  | 0.0  | 1260.0 | 0.0         | 0.0  |  |  |
| 15               | 1050.0 | 0.0  | 0.0  | 1200.0      | 0.0  | 0.0  | 1350.0 | 0.0         | 0.0  |  |  |
| 16               | 1120.0 | 0.0  | 0.0  | 1280.0      | 0.0  | 0.0  | 1440.0 | 0.0         | 0.0  |  |  |
| 17               | 1190.0 | 0.0  | 0.0  | 1360.0      | 0.0  | 0.0  | 1530.0 | 0.0         | 0.0  |  |  |
| 18               | 1260.0 | 0.0  | 0.0  | 1440.0      | 0.0  | 0.0  | 1620.0 | 0.0         | 0.0  |  |  |
| 19               | 1330.0 | 0.0  | 0.0  | 1520.0      | 0.0  | 0.0  | 1710.0 | 0.0         | 0.0  |  |  |
| 20               | 1400.0 | 0.0  | 0.0  | 1600.0      | 0.0  | 0.0  | 1800.0 | 0.0         | 0.0  |  |  |
| 21               | 1470.0 | 0.0  | 0.0  | 1680.0      | 0.0  | 0.0  | 1890.0 | 0.0         | 0.0  |  |  |
| 22               | 1540.0 | 0.0  | 0.0  | 1760.0      | 0.0  | 0.0  | 1980.0 | 0.0         | 0.0  |  |  |
| 23               | 1610.0 | 0.0  | 0.0  | 1840.0      | 0.0  | 0.0  | 2070.0 | 0.0         | 0.0  |  |  |
| 24               | 1680.0 | 0.0  | 0.0  | 1920.0      | 0.0  | 0.0  | 2160.0 | 0.0         | 0.0  |  |  |
| 25               | 1750.0 | 0.0  | 0.0  | 2000.0      | 0.0  | 0.0  | 2250.0 | 0.0         | 0.0  |  |  |
| 26               | 1820.0 | 0.0  | 0.0  | 2080.0      | 0.0  | 0.0  | 2340.0 | 0.0         | 0.0  |  |  |
| 27               | 1890.0 | 0.0  | 0.0  | 2160.0      | 0.0  | 0.0  | 2430.0 | 0.0         | 0.0  |  |  |
| 28               | 1960.0 | 0.0  | 0.0  | 2240.0      | 0.0  | 0.0  | 2520.0 | 0.0         | 0.0  |  |  |
| 29               | 2030.0 | 0.0  | 0.0  | 2320.0      | 0.0  | 0.0  | 2610.0 | 0.0         | 0.0  |  |  |
| 30               | 2100.0 | 0.0  | 0.0  | 2400.0      | 0.0  | 0.0  | 2700.0 | 0.0         | 0.0  |  |  |
| 31               | 2170.0 | 0.0  | 0.0  | 2480.0      | 0.0  | 0.0  | 2790.0 | 0.0         | 0.0  |  |  |
| 32               | 2240.0 | 0.0  | 0.0  | 2560.0      | 0.0  | 0.0  | 2880.0 | 0.0         | 0.0  |  |  |
| 33               | 2310.0 | 0.0  | 0.0  | 2640.0      | 0.0  | 0.0  | 2970.0 | 0.0         | 0.0  |  |  |
| 34               | 2380.0 | 0.0  | 0.0  | 2720.0      | 0.0  | 0.0  | 3060.0 | 0.0         | 0.0  |  |  |
| 35               | 2450.0 | 0.0  | 0.0  | 2800.0      | 0.0  | 0.0  | 3150.0 | 0.0         | 0.0  |  |  |
| 36               | 2520.0 | 0.0  | 0.0  | 2880.0      | 0.0  | 0.0  | 3240.0 | 0.0         | 0.0  |  |  |
| 37               | 2590.0 | 0.0  | 0.0  | 2960.0      | 0.0  | 0.0  | 3330.0 | 0.0         | 0.0  |  |  |
| 38               | 2660.0 | 0.0  | 0.0  | 3040.0      | 0.0  | 0.0  | 3420.0 | 0.0         | 0.0  |  |  |
| 39               | 2730.0 | 0.0  | 0.0  | 3120.0      | 0.0  | 0.0  | 3510.0 | 0.0         | 0.0  |  |  |
| 40               | 2800.0 | 0.0  | 0.0  | 3200.0      | 0.0  | 0.0  | 3600.0 | 0.0         | 0.0  |  |  |
| OASPL            |        |      |      |             | 47.9 | 25.4 |        | 47.3        | 28.2 |  |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 7 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |             |       |      |  |
|------------------|--------|-------|------|-------------|-------|------|-------------|-------|------|--|
| FNC-7 / 179      |        |       |      | FNC-8 / 180 |       |      | FNC-9 / 181 |       |      |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F           | SPL   | SPLA |  |
| 1                | 70.0   | 108.6 | 82.4 | 80.0        | 114.2 | 91.7 | 90.0        | 115.9 | 96.8 |  |
| 2                | 140.0  | 99.1  | 83.0 | 160.0       | 106.7 | 93.3 | 180.0       | 0.0   | 0.0  |  |
| 3                | 210.0  | 88.8  | 77.9 | 240.0       | 102.0 | 93.4 | 270.0       | 0.0   | 0.0  |  |
| 4                | 280.0  | 72.8  | 64.2 | 320.0       | 95.4  | 88.8 | 360.0       | 0.0   | 0.0  |  |
| 5                | 350.0  | 0.0   | 0.0  | 400.0       | 87.4  | 82.6 | 450.0       | 0.0   | 0.0  |  |
| 6                | 420.0  | 0.0   | 0.0  | 480.0       | 72.9  | 69.7 | 540.0       | 0.0   | 0.0  |  |
| 7                | 490.0  | 0.0   | 0.0  | 560.0       | 75.9  | 72.7 | 630.0       | 0.0   | 0.0  |  |
| 8                | 560.0  | 0.0   | 0.0  | 640.0       | 71.0  | 69.1 | 720.0       | 0.0   | 0.0  |  |
| 9                | 630.0  | 0.0   | 0.0  | 720.0       | 69.0  | 68.2 | 810.0       | 0.0   | 0.0  |  |
| 10               | 700.0  | 0.0   | 0.0  | 800.0       | 54.8  | 54.0 | 900.0       | 0.0   | 0.0  |  |
| 11               | 770.0  | 0.0   | 0.0  | 880.0       | 0.0   | 0.0  | 990.0       | 0.0   | 0.0  |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 0.0   | 0.0  | 1080.0      | 0.0   | 0.0  |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 0.0   | 0.0  | 1170.0      | 0.0   | 0.0  |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0  |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 0.0   | 0.0  | 1350.0      | 0.0   | 0.0  |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 0.0   | 0.0  | 1440.0      | 0.0   | 0.0  |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 0.0   | 0.0  | 1530.0      | 0.0   | 0.0  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 0.0   | 0.0  | 1620.0      | 0.0   | 0.0  |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 0.0   | 0.0  | 1710.0      | 0.0   | 0.0  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0  | 1800.0      | 0.0   | 0.0  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0  | 1980.0      | 0.0   | 0.0  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0  | 2070.0      | 0.0   | 0.0  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0  | 2250.0      | 0.0   | 0.0  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0  | 2340.0      | 0.0   | 0.0  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0  | 2430.0      | 0.0   | 0.0  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0  | 2610.0      | 0.0   | 0.0  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0  | 2700.0      | 0.0   | 0.0  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0  | 2790.0      | 0.0   | 0.0  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0  | 2970.0      | 0.0   | 0.0  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0  | 3060.0      | 0.0   | 0.0  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3150.0      | 0.0   | 0.0  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0  | 3240.0      | 0.0   | 0.0  |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0  | 3330.0      | 0.0   | 0.0  |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0  | 3420.0      | 0.0   | 0.0  |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0  | 3510.0      | 0.0   | 0.0  |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0  | 3600.0      | 0.0   | 0.0  |  |
| OASPL            |        | 109.1 | 86.4 | 115.2       |       | 98.3 | 115.9       |       | 96.8 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 9 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |             |       |       |  |
|------------------|--------|-------|------|-------------|-------|-------|-------------|-------|-------|--|
| FNC-7 / 179      |        |       |      | FNC-8 / 180 |       |       | FNC-9 / 181 |       |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F           | SPL   | SPLA  |  |
| 1                | 70.0   | 106.1 | 79.9 | 80.0        | 113.5 | 91.0  | 90.0        | 113.7 | 94.6  |  |
| 2                | 140.0  | 104.2 | 88.1 | 160.0       | 108.6 | 95.2  | 180.0       | 108.7 | 97.8  |  |
| 3                | 210.0  | 94.7  | 83.8 | 240.0       | 106.2 | 97.6  | 270.0       | 115.4 | 106.8 |  |
| 4                | 280.0  | 96.8  | 88.2 | 320.0       | 107.0 | 100.4 | 360.0       | 112.3 | 107.5 |  |
| 5                | 350.0  | 91.9  | 85.3 | 400.0       | 100.9 | 96.1  | 450.0       | 110.8 | 107.6 |  |
| 6                | 420.0  | 83.3  | 78.5 | 480.0       | 99.5  | 96.3  | 540.0       | 112.5 | 109.3 |  |
| 7                | 490.0  | 80.1  | 76.9 | 560.0       | 99.6  | 96.4  | 630.0       | 109.9 | 108.0 |  |
| 8                | 560.0  | 78.7  | 75.5 | 640.0       | 94.3  | 92.4  | 720.0       | 109.2 | 108.4 |  |
| 9                | 630.0  | 74.4  | 72.5 | 720.0       | 92.2  | 91.4  | 810.0       | 109.8 | 109.0 |  |
| 10               | 700.0  | 69.3  | 67.4 | 800.0       | 92.1  | 91.3  | 900.0       | 105.7 | 105.7 |  |
| 11               | 770.0  | 64.6  | 63.8 | 880.0       | 87.3  | 86.5  | 990.0       | 105.7 | 105.7 |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 83.5  | 83.5  | 1080.0      | 106.1 | 106.1 |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 84.9  | 84.9  | 1170.0      | 102.9 | 103.5 |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 75.4  | 75.4  | 1260.0      | 101.8 | 102.4 |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 76.7  | 77.3  | 1350.0      | 101.8 | 102.4 |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 74.9  | 75.5  | 1440.0      | 100.2 | 101.2 |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 71.5  | 72.1  | 1530.0      | 96.9  | 97.9  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 66.3  | 67.3  | 1620.0      | 97.1  | 98.1  |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 0.0   | 0.0   | 1710.0      | 94.9  | 95.9  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0   | 1800.0      | 93.5  | 94.7  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   | 1890.0      | 93.5  | 94.7  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0   | 1980.0      | 89.3  | 90.5  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0      | 89.9  | 91.1  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0      | 90.3  | 91.5  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0      | 81.0  | 82.3  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0      | 86.0  | 87.3  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0      | 84.5  | 85.8  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0      | 80.5  | 81.8  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0      | 82.2  | 83.5  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0      | 79.5  | 80.8  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0      | 78.9  | 80.2  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0      | 79.6  | 80.8  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0      | 76.6  | 77.8  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0      | 75.9  | 77.1  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0      | 74.7  | 75.9  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0      | 73.6  | 74.8  |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0      | 69.4  | 70.6  |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0      | 71.5  | 72.7  |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0      | 72.8  | 74.0  |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0      | 65.2  | 66.2  |  |
| OASPL            |        | 108.8 | 93.3 | 116.3       |       | 106.0 | 122.0       |       | 118.3 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 1 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |      |      |              |       |      |              |       |      |  |
|------------------|--------|------|------|--------------|-------|------|--------------|-------|------|--|
| FNC-10 / 182     |        |      |      | FNC-11 / 183 |       |      | FNC-12 / 184 |       |      |  |
| HN               | F      | SPL  | SPLA | F            | SPL   | SPLA | F            | SPL   | SPLA |  |
| 1                | 60.0   | 98.4 | 72.2 | 70.0         | 101.9 | 75.7 | 80.0         | 107.0 | 84.5 |  |
| 2                | 120.0  | 86.7 | 70.6 | 140.0        | 91.9  | 75.8 | 160.0        | 103.0 | 89.6 |  |
| 3                | 180.0  | 79.9 | 69.0 | 210.0        | 92.1  | 81.2 | 240.0        | 100.9 | 92.3 |  |
| 4                | 240.0  | 67.5 | 58.9 | 280.0        | 87.2  | 78.6 | 320.0        | 96.3  | 89.7 |  |
| 5                | 300.0  | 70.7 | 64.1 | 350.0        | 80.5  | 73.9 | 400.0        | 96.1  | 91.3 |  |
| 6                | 360.0  | 56.5 | 51.7 | 420.0        | 72.2  | 67.4 | 480.0        | 88.5  | 85.3 |  |
| 7                | 420.0  | 0.0  | 0.0  | 490.0        | 71.9  | 68.7 | 560.0        | 85.6  | 82.4 |  |
| 8                | 480.0  | 0.0  | 0.0  | 560.0        | 62.5  | 59.3 | 640.0        | 80.4  | 78.5 |  |
| 9                | 540.0  | 0.0  | 0.0  | 630.0        | 0.0   | 0.0  | 720.0        | 81.2  | 80.4 |  |
| 10               | 600.0  | 0.0  | 0.0  | 700.0        | 0.0   | 0.0  | 800.0        | 72.3  | 71.5 |  |
| 11               | 660.0  | 0.0  | 0.0  | 770.0        | 0.0   | 0.0  | 880.0        | 72.8  | 72.0 |  |
| 12               | 720.0  | 0.0  | 0.0  | 840.0        | 0.0   | 0.0  | 960.0        | 57.4  | 57.4 |  |
| 13               | 780.0  | 0.0  | 0.0  | 910.0        | 0.0   | 0.0  | 1040.0       | 0.0   | 0.0  |  |
| 14               | 840.0  | 0.0  | 0.0  | 980.0        | 0.0   | 0.0  | 1120.0       | 0.0   | 0.0  |  |
| 15               | 900.0  | 0.0  | 0.0  | 1050.0       | 0.0   | 0.0  | 1200.0       | 0.0   | 0.0  |  |
| 16               | 960.0  | 0.0  | 0.0  | 1120.0       | 0.0   | 0.0  | 1280.0       | 0.0   | 0.0  |  |
| 17               | 1020.0 | 0.0  | 0.0  | 1190.0       | 0.0   | 0.0  | 1360.0       | 0.0   | 0.0  |  |
| 18               | 1080.0 | 0.0  | 0.0  | 1260.0       | 0.0   | 0.0  | 1440.0       | 0.0   | 0.0  |  |
| 19               | 1140.0 | 0.0  | 0.0  | 1330.0       | 0.0   | 0.0  | 1520.0       | 0.0   | 0.0  |  |
| 20               | 1200.0 | 0.0  | 0.0  | 1400.0       | 0.0   | 0.0  | 1600.0       | 0.0   | 0.0  |  |
| 21               | 1260.0 | 0.0  | 0.0  | 1470.0       | 0.0   | 0.0  | 1680.0       | 0.0   | 0.0  |  |
| 22               | 1320.0 | 0.0  | 0.0  | 1540.0       | 0.0   | 0.0  | 1760.0       | 0.0   | 0.0  |  |
| 23               | 1380.0 | 0.0  | 0.0  | 1610.0       | 0.0   | 0.0  | 1840.0       | 0.0   | 0.0  |  |
| 24               | 1440.0 | 0.0  | 0.0  | 1680.0       | 0.0   | 0.0  | 1920.0       | 0.0   | 0.0  |  |
| 25               | 1500.0 | 0.0  | 0.0  | 1750.0       | 0.0   | 0.0  | 2000.0       | 0.0   | 0.0  |  |
| 26               | 1560.0 | 0.0  | 0.0  | 1820.0       | 0.0   | 0.0  | 2080.0       | 0.0   | 0.0  |  |
| 27               | 1620.0 | 0.0  | 0.0  | 1890.0       | 0.0   | 0.0  | 2160.0       | 0.0   | 0.0  |  |
| 28               | 1680.0 | 0.0  | 0.0  | 1960.0       | 0.0   | 0.0  | 2240.0       | 0.0   | 0.0  |  |
| 29               | 1740.0 | 0.0  | 0.0  | 2030.0       | 0.0   | 0.0  | 2320.0       | 0.0   | 0.0  |  |
| 30               | 1800.0 | 0.0  | 0.0  | 2100.0       | 0.0   | 0.0  | 2400.0       | 0.0   | 0.0  |  |
| 31               | 1860.0 | 0.0  | 0.0  | 2170.0       | 0.0   | 0.0  | 2480.0       | 0.0   | 0.0  |  |
| 32               | 1920.0 | 0.0  | 0.0  | 2240.0       | 0.0   | 0.0  | 2560.0       | 0.0   | 0.0  |  |
| 33               | 1980.0 | 0.0  | 0.0  | 2310.0       | 0.0   | 0.0  | 2640.0       | 0.0   | 0.0  |  |
| 34               | 2040.0 | 0.0  | 0.0  | 2380.0       | 0.0   | 0.0  | 2720.0       | 0.0   | 0.0  |  |
| 35               | 2100.0 | 0.0  | 0.0  | 2450.0       | 0.0   | 0.0  | 2800.0       | 0.0   | 0.0  |  |
| 36               | 2160.0 | 0.0  | 0.0  | 2520.0       | 0.0   | 0.0  | 2880.0       | 0.0   | 0.0  |  |
| 37               | 2220.0 | 0.0  | 0.0  | 2590.0       | 0.0   | 0.0  | 2960.0       | 0.0   | 0.0  |  |
| 38               | 2280.0 | 0.0  | 0.0  | 2660.0       | 0.0   | 0.0  | 3040.0       | 0.0   | 0.0  |  |
| 39               | 2340.0 | 0.0  | 0.0  | 2730.0       | 0.0   | 0.0  | 3120.0       | 0.0   | 0.0  |  |
| 40               | 2400.0 | 0.0  | 0.0  | 2800.0       | 0.0   | 0.0  | 3200.0       | 0.0   | 0.0  |  |
| OASPL            |        | 98.8 | 76.0 |              | 102.9 | 85.0 |              | 109.6 | 97.7 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA



# DNW PROPELLER NOISE TEST

MICROPHONE: MP 2 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |              |       |       |        |              |      |       |       |
|------------------|--------|-------|------|--------------|-------|-------|--------|--------------|------|-------|-------|
| FNC-10 / 182     |        |       |      | FNC-11 / 183 |       |       |        | FNC-12 / 184 |      |       |       |
| HN               | F      | SPL   | SPLA | F            | SPL   | SPLA  | F      | SPL          | SPLA |       |       |
| 1                | 60.0   | 101.3 | 75.1 | 70.0         | 106.6 | 80.4  | 80.0   | 108.6        | 86.1 |       |       |
| 2                | 120.0  | 96.6  | 80.5 | 140.0        | 101.0 | 84.9  | 160.0  | 108.6        | 95.2 |       |       |
| 3                | 180.0  | 91.1  | 80.2 | 210.0        | 98.1  | 87.2  | 240.0  | 104.8        | 96.2 |       |       |
| 4                | 240.0  | 81.9  | 73.3 | 280.0        | 93.0  | 84.4  | 320.0  | 101.4        | 94.8 |       |       |
| 5                | 300.0  | 74.4  | 67.8 | 350.0        | 88.7  | 82.1  | 400.0  | 99.9         | 95.1 |       |       |
| 6                | 360.0  | 72.8  | 68.0 | 420.0        | 84.5  | 79.7  | 480.0  | 100.0        | 96.8 |       |       |
| 7                | 420.0  | 68.6  | 63.8 | 490.0        | 79.4  | 76.2  | 560.0  | 96.2         | 93.0 |       |       |
| 8                | 480.0  | 52.9  | 49.7 | 560.0        | 78.7  | 75.5  | 640.0  | 92.7         | 90.8 |       |       |
| 9                | 540.0  | 0.0   | 0.0  | 630.0        | 63.4  | 61.5  | 720.0  | 88.9         | 88.1 |       |       |
| 10               | 600.0  | 0.0   | 0.0  | 700.0        | 0.0   | 0.0   | 800.0  | 87.2         | 86.4 |       |       |
| 11               | 660.0  | 0.0   | 0.0  | 770.0        | 0.0   | 0.0   | 880.0  | 86.6         | 85.8 |       |       |
| 12               | 720.0  | 0.0   | 0.0  | 840.0        | 0.0   | 0.0   | 960.0  | 80.0         | 80.0 |       |       |
| 13               | 780.0  | 0.0   | 0.0  | 910.0        | 0.0   | 0.0   | 1040.0 | 78.9         | 78.9 |       |       |
| 14               | 840.0  | 0.0   | 0.0  | 980.0        | 0.0   | 0.0   | 1120.0 | 74.3         | 74.3 |       |       |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0       | 0.0   | 0.0   | 1200.0 | 74.9         | 75.5 |       |       |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0       | 0.0   | 0.0   | 1280.0 | 65.8         | 66.4 |       |       |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0       | 0.0   | 0.0   | 1360.0 | 0.0          | 0.0  |       |       |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0       | 0.0   | 0.0   | 1440.0 | 0.0          | 0.0  |       |       |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0       | 0.0   | 0.0   | 1520.0 | 0.0          | 0.0  |       |       |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0       | 0.0   | 0.0   | 1600.0 | 0.0          | 0.0  |       |       |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0       | 0.0   | 0.0   | 1680.0 | 0.0          | 0.0  |       |       |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0       | 0.0   | 0.0   | 1760.0 | 0.0          | 0.0  |       |       |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0       | 0.0   | 0.0   | 1840.0 | 0.0          | 0.0  |       |       |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0       | 0.0   | 0.0   | 1920.0 | 0.0          | 0.0  |       |       |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0       | 0.0   | 0.0   | 2000.0 | 0.0          | 0.0  |       |       |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0       | 0.0   | 0.0   | 2080.0 | 0.0          | 0.0  |       |       |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0       | 0.0   | 0.0   | 2160.0 | 0.0          | 0.0  |       |       |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0       | 0.0   | 0.0   | 2240.0 | 0.0          | 0.0  |       |       |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0       | 0.0   | 0.0   | 2320.0 | 0.0          | 0.0  |       |       |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0       | 0.0   | 0.0   | 2400.0 | 0.0          | 0.0  |       |       |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0       | 0.0   | 0.0   | 2480.0 | 0.0          | 0.0  |       |       |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0       | 0.0   | 0.0   | 2560.0 | 0.0          | 0.0  |       |       |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0       | 0.0   | 0.0   | 2640.0 | 0.0          | 0.0  |       |       |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0       | 0.0   | 0.0   | 2720.0 | 0.0          | 0.0  |       |       |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0       | 0.0   | 0.0   | 2800.0 | 0.0          | 0.0  |       |       |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0       | 0.0   | 0.0   | 2880.0 | 0.0          | 0.0  |       |       |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0       | 0.0   | 0.0   | 2960.0 | 0.0          | 0.0  |       |       |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0       | 0.0   | 0.0   | 3040.0 | 0.0          | 0.0  |       |       |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0       | 0.0   | 0.0   | 3120.0 | 0.0          | 0.0  |       |       |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0       | 0.0   | 0.0   | 3200.0 | 0.0          | 0.0  |       |       |
| OASPL            |        | 102.9 | 84.6 |              |       | 108.3 | 91.9   |              |      | 113.4 | 103.8 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 3 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |              |       |       |              |       |       |               |
|------------------|--------|-------|------|--------------|-------|-------|--------------|-------|-------|---------------|
| FNC-10 / 182     |        |       |      | FNC-11 / 183 |       |       | FNC-12 / 184 |       |       |               |
| HN               | F      | SPL   | SPLA | F            | SPL   | SPLA  | F            | SPL   | SPLA  |               |
| 1                | 60.0   | 103.7 | 77.5 | 70.0         | 108.6 | 82.4  | 80.0         | 111.4 | 88.9  |               |
| 2                | 120.0  | 98.3  | 82.2 | 140.0        | 103.4 | 87.3  | 160.0        | 110.3 | 96.9  |               |
| 3                | 180.0  | 91.4  | 80.5 | 210.0        | 99.8  | 88.9  | 240.0        | 108.7 | 100.1 |               |
| 4                | 240.0  | 84.9  | 76.3 | 280.0        | 95.8  | 87.2  | 320.0        | 104.2 | 97.6  |               |
| 5                | 300.0  | 75.2  | 68.6 | 350.0        | 92.6  | 86.0  | 400.0        | 104.8 | 100.0 |               |
| 6                | 360.0  | 72.0  | 67.2 | 420.0        | 87.1  | 82.3  | 480.0        | 101.6 | 98.4  |               |
| 7                | 420.0  | 70.3  | 65.5 | 490.0        | 84.0  | 80.8  | 560.0        | 97.6  | 94.4  |               |
| 8                | 480.0  | 63.0  | 59.8 | 560.0        | 74.0  | 70.8  | 640.0        | 97.8  | 95.9  |               |
| 9                | 540.0  | 0.0   | 0.0  | 630.0        | 76.1  | 74.2  | 720.0        | 94.8  | 94.0  |               |
| 10               | 600.0  | 0.0   | 0.0  | 700.0        | 67.0  | 65.1  | 800.0        | 92.7  | 91.9  |               |
| 11               | 660.0  | 0.0   | 0.0  | 770.0        | 0.0   | 0.0   | 880.0        | 89.0  | 88.2  |               |
| 12               | 720.0  | 0.0   | 0.0  | 840.0        | 0.0   | 0.0   | 960.0        | 87.8  | 87.8  |               |
| 13               | 780.0  | 0.0   | 0.0  | 910.0        | 0.0   | 0.0   | 1040.0       | 85.0  | 85.0  |               |
| 14               | 840.0  | 0.0   | 0.0  | 980.0        | 0.0   | 0.0   | 1120.0       | 79.3  | 79.3  |               |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0       | 0.0   | 0.0   | 1200.0       | 78.6  | 79.2  |               |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0       | 0.0   | 0.0   | 1280.0       | 77.4  | 78.0  |               |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0       | 0.0   | 0.0   | 1360.0       | 73.1  | 73.7  |               |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0       | 0.0   | 0.0   | 1440.0       | 71.4  | 72.4  |               |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0       | 0.0   | 0.0   | 1520.0       | 63.4  | 64.4  |               |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0       | 0.0   | 0.0   | 1600.0       | 0.0   | 0.0   |               |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0       | 0.0   | 0.0   | 1680.0       | 0.0   | 0.0   |               |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0       | 0.0   | 0.0   | 1760.0       | 0.0   | 0.0   |               |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0       | 0.0   | 0.0   | 1840.0       | 0.0   | 0.0   |               |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0       | 0.0   | 0.0   | 1920.0       | 0.0   | 0.0   |               |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0       | 0.0   | 0.0   | 2000.0       | 0.0   | 0.0   |               |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0       | 0.0   | 0.0   | 2080.0       | 0.0   | 0.0   |               |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0       | 0.0   | 0.0   | 2160.0       | 0.0   | 0.0   |               |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0       | 0.0   | 0.0   | 2240.0       | 0.0   | 0.0   |               |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0       | 0.0   | 0.0   | 2320.0       | 0.0   | 0.0   |               |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0       | 0.0   | 0.0   | 2400.0       | 0.0   | 0.0   |               |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0       | 0.0   | 0.0   | 2480.0       | 0.0   | 0.0   |               |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0       | 0.0   | 0.0   | 2560.0       | 0.0   | 0.0   |               |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0       | 0.0   | 0.0   | 2640.0       | 0.0   | 0.0   |               |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0       | 0.0   | 0.0   | 2720.0       | 0.0   | 0.0   |               |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0       | 0.0   | 0.0   | 2800.0       | 0.0   | 0.0   |               |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0       | 0.0   | 0.0   | 2880.0       | 0.0   | 0.0   |               |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0       | 0.0   | 0.0   | 2960.0       | 0.0   | 0.0   |               |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0       | 0.0   | 0.0   | 3040.0       | 0.0   | 0.0   |               |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0       | 0.0   | 0.0   | 3120.0       | 0.0   | 0.0   |               |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0       | 0.0   | 0.0   | 3200.0       | 0.0   | 0.0   |               |
| OASPL            |        | 105.0 | 86.0 |              |       | 110.4 | 94.4         |       |       | 116.1   107.1 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 4 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |              |       |       |        |              |       |       |       |
|------------------|--------|-------|------|--------------|-------|-------|--------|--------------|-------|-------|-------|
| FNC-10 / 182     |        |       |      | FNC-11 / 183 |       |       |        | FNC-12 / 184 |       |       |       |
| HN               | F      | SPL   | SPLA | F            | SPL   | SPLA  | F      | SPL          | SPLA  |       |       |
| 1                | 60.0   | 105.6 | 79.4 | 70.0         | 110.5 | 84.3  | 80.0   | 114.6        | 92.1  |       |       |
| 2                | 120.0  | 100.0 | 83.9 | 140.0        | 105.5 | 89.4  | 160.0  | 111.2        | 97.8  |       |       |
| 3                | 180.0  | 91.6  | 80.7 | 210.0        | 100.1 | 89.2  | 240.0  | 110.8        | 102.2 |       |       |
| 4                | 240.0  | 85.7  | 77.1 | 280.0        | 99.7  | 91.1  | 320.0  | 108.7        | 102.1 |       |       |
| 5                | 300.0  | 78.5  | 71.9 | 350.0        | 92.3  | 85.7  | 400.0  | 103.7        | 98.9  |       |       |
| 6                | 360.0  | 72.0  | 67.2 | 420.0        | 89.6  | 84.8  | 480.0  | 102.7        | 99.5  |       |       |
| 7                | 420.0  | 65.6  | 60.8 | 490.0        | 82.3  | 79.1  | 560.0  | 101.0        | 97.8  |       |       |
| 8                | 480.0  | 59.8  | 56.6 | 560.0        | 83.3  | 80.1  | 640.0  | 98.6         | 96.7  |       |       |
| 9                | 540.0  | 0.0   | 0.0  | 630.0        | 71.2  | 69.3  | 720.0  | 95.4         | 94.6  |       |       |
| 10               | 600.0  | 0.0   | 0.0  | 700.0        | 74.2  | 72.3  | 800.0  | 93.3         | 92.5  |       |       |
| 11               | 660.0  | 0.0   | 0.0  | 770.0        | 66.0  | 65.2  | 880.0  | 90.5         | 89.7  |       |       |
| 12               | 720.0  | 0.0   | 0.0  | 840.0        | 0.0   | 0.0   | 960.0  | 87.6         | 87.6  |       |       |
| 13               | 780.0  | 0.0   | 0.0  | 910.0        | 0.0   | 0.0   | 1040.0 | 86.4         | 86.4  |       |       |
| 14               | 840.0  | 0.0   | 0.0  | 980.0        | 0.0   | 0.0   | 1120.0 | 83.8         | 83.8  |       |       |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0       | 0.0   | 0.0   | 1200.0 | 80.2         | 80.8  |       |       |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0       | 0.0   | 0.0   | 1280.0 | 75.6         | 76.2  |       |       |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0       | 0.0   | 0.0   | 1360.0 | 74.7         | 75.3  |       |       |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0       | 0.0   | 0.0   | 1440.0 | 73.1         | 74.1  |       |       |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0       | 0.0   | 0.0   | 1520.0 | 68.0         | 69.0  |       |       |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0       | 0.0   | 0.0   | 1600.0 | 0.0          | 0.0   |       |       |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0       | 0.0   | 0.0   | 1680.0 | 0.0          | 0.0   |       |       |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0       | 0.0   | 0.0   | 1760.0 | 0.0          | 0.0   |       |       |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0       | 0.0   | 0.0   | 1840.0 | 0.0          | 0.0   |       |       |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0       | 0.0   | 0.0   | 1920.0 | 0.0          | 0.0   |       |       |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0       | 0.0   | 0.0   | 2000.0 | 0.0          | 0.0   |       |       |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0       | 0.0   | 0.0   | 2080.0 | 0.0          | 0.0   |       |       |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0       | 0.0   | 0.0   | 2160.0 | 0.0          | 0.0   |       |       |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0       | 0.0   | 0.0   | 2240.0 | 0.0          | 0.0   |       |       |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0       | 0.0   | 0.0   | 2320.0 | 0.0          | 0.0   |       |       |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0       | 0.0   | 0.0   | 2400.0 | 0.0          | 0.0   |       |       |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0       | 0.0   | 0.0   | 2480.0 | 0.0          | 0.0   |       |       |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0       | 0.0   | 0.0   | 2560.0 | 0.0          | 0.0   |       |       |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0       | 0.0   | 0.0   | 2640.0 | 0.0          | 0.0   |       |       |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0       | 0.0   | 0.0   | 2720.0 | 0.0          | 0.0   |       |       |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0       | 0.0   | 0.0   | 2800.0 | 0.0          | 0.0   |       |       |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0       | 0.0   | 0.0   | 2880.0 | 0.0          | 0.0   |       |       |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0       | 0.0   | 0.0   | 2960.0 | 0.0          | 0.0   |       |       |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0       | 0.0   | 0.0   | 3040.0 | 0.0          | 0.0   |       |       |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0       | 0.0   | 0.0   | 3120.0 | 0.0          | 0.0   |       |       |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0       | 0.0   | 0.0   | 3200.0 | 0.0          | 0.0   |       |       |
| OASPL            |        | 106.8 | 87.2 |              |       | 112.3 | 96.2   |              |       | 118.3 | 108.7 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 5 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |              |       |       |        |              |       |             |
|------------------|--------|-------|------|--------------|-------|-------|--------|--------------|-------|-------------|
| FNC-10 / 182     |        |       |      | FNC-11 / 183 |       |       |        | FNC-12 / 184 |       |             |
| HN               | F      | SPL   | SPLA | F            | SPL   | SPLA  | F      | SPL          | SPLA  |             |
| 1                | 60.0   | 106.3 | 80.1 | 70.0         | 112.0 | 85.8  | 80.0   | 117.4        | 94.9  |             |
| 2                | 120.0  | 101.1 | 85.0 | 140.0        | 107.4 | 91.3  | 160.0  | 112.1        | 98.7  |             |
| 3                | 180.0  | 90.9  | 80.0 | 210.0        | 98.5  | 87.6  | 240.0  | 109.5        | 100.9 |             |
| 4                | 240.0  | 82.5  | 73.9 | 280.0        | 99.4  | 90.8  | 320.0  | 111.5        | 104.9 |             |
| 5                | 300.0  | 77.7  | 71.1 | 350.0        | 96.1  | 89.5  | 400.0  | 106.1        | 101.3 |             |
| 6                | 360.0  | 77.1  | 72.3 | 420.0        | 85.4  | 80.6  | 480.0  | 98.9         | 95.7  |             |
| 7                | 420.0  | 73.8  | 69.0 | 490.0        | 82.8  | 79.6  | 560.0  | 99.9         | 96.7  |             |
| 8                | 480.0  | 65.0  | 61.8 | 560.0        | 77.3  | 74.1  | 640.0  | 98.4         | 96.5  |             |
| 9                | 540.0  | 60.1  | 56.9 | 630.0        | 78.1  | 76.2  | 720.0  | 94.0         | 93.2  |             |
| 10               | 600.0  | 0.0   | 0.0  | 700.0        | 64.9  | 63.0  | 800.0  | 88.3         | 87.5  |             |
| 11               | 660.0  | 0.0   | 0.0  | 770.0        | 0.0   | 0.0   | 880.0  | 87.7         | 86.9  |             |
| 12               | 720.0  | 0.0   | 0.0  | 840.0        | 0.0   | 0.0   | 960.0  | 87.4         | 87.4  |             |
| 13               | 780.0  | 0.0   | 0.0  | 910.0        | 0.0   | 0.0   | 1040.0 | 83.1         | 83.1  |             |
| 14               | 840.0  | 0.0   | 0.0  | 980.0        | 0.0   | 0.0   | 1120.0 | 79.1         | 79.1  |             |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0       | 0.0   | 0.0   | 1200.0 | 77.9         | 78.5  |             |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0       | 0.0   | 0.0   | 1280.0 | 78.1         | 78.7  |             |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0       | 0.0   | 0.0   | 1360.0 | 70.9         | 71.5  |             |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0       | 0.0   | 0.0   | 1440.0 | 67.8         | 68.8  |             |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0       | 0.0   | 0.0   | 1520.0 | 70.0         | 71.0  |             |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0       | 0.0   | 0.0   | 1600.0 | 62.6         | 63.6  |             |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0       | 0.0   | 0.0   | 1680.0 | 0.0          | 0.0   |             |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0       | 0.0   | 0.0   | 1760.0 | 0.0          | 0.0   |             |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0       | 0.0   | 0.0   | 1840.0 | 0.0          | 0.0   |             |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0       | 0.0   | 0.0   | 1920.0 | 0.0          | 0.0   |             |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0       | 0.0   | 0.0   | 2000.0 | 0.0          | 0.0   |             |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0       | 0.0   | 0.0   | 2080.0 | 0.0          | 0.0   |             |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0       | 0.0   | 0.0   | 2160.0 | 0.0          | 0.0   |             |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0       | 0.0   | 0.0   | 2240.0 | 0.0          | 0.0   |             |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0       | 0.0   | 0.0   | 2320.0 | 0.0          | 0.0   |             |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0       | 0.0   | 0.0   | 2400.0 | 0.0          | 0.0   |             |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0       | 0.0   | 0.0   | 2480.0 | 0.0          | 0.0   |             |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0       | 0.0   | 0.0   | 2560.0 | 0.0          | 0.0   |             |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0       | 0.0   | 0.0   | 2640.0 | 0.0          | 0.0   |             |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0       | 0.0   | 0.0   | 2720.0 | 0.0          | 0.0   |             |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0       | 0.0   | 0.0   | 2800.0 | 0.0          | 0.0   |             |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0       | 0.0   | 0.0   | 2880.0 | 0.0          | 0.0   |             |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0       | 0.0   | 0.0   | 2960.0 | 0.0          | 0.0   |             |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0       | 0.0   | 0.0   | 3040.0 | 0.0          | 0.0   |             |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0       | 0.0   | 0.0   | 3120.0 | 0.0          | 0.0   |             |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0       | 0.0   | 0.0   | 3200.0 | 0.0          | 0.0   |             |
| OASPL            |        | 107.5 | 87.6 |              |       | 113.7 | 96.7   |              |       | 120.0 109.2 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 6 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |      |      |              |      |      |        |              |      |  |  |
|------------------|--------|------|------|--------------|------|------|--------|--------------|------|--|--|
| FNC-10 / 182     |        |      |      | FNC-11 / 183 |      |      |        | FNC-12 / 184 |      |  |  |
| HN               | F      | SPL  | SPLA | F            | SPL  | SPLA | F      | SPL          | SPLA |  |  |
| 1                | 60.0   | 54.1 | 27.9 | 70.0         | 71.2 | 45.0 | 80.0   | 76.2         | 53.7 |  |  |
| 2                | 120.0  | 48.8 | 32.7 | 140.0        | 64.5 | 48.4 | 160.0  | 68.7         | 55.3 |  |  |
| 3                | 180.0  | 35.9 | 25.0 | 210.0        | 55.0 | 44.1 | 240.0  | 66.1         | 57.5 |  |  |
| 4                | 240.0  | 26.1 | 17.5 | 280.0        | 0.0  | 0.0  | 320.0  | 0.0          | 0.0  |  |  |
| 5                | 300.0  | 0.0  | 0.0  | 350.0        | 0.0  | 0.0  | 400.0  | 0.0          | 0.0  |  |  |
| 6                | 360.0  | 0.0  | 0.0  | 420.0        | 0.0  | 0.0  | 480.0  | 0.0          | 0.0  |  |  |
| 7                | 420.0  | 0.0  | 0.0  | 490.0        | 0.0  | 0.0  | 560.0  | 0.0          | 0.0  |  |  |
| 8                | 480.0  | 0.0  | 0.0  | 560.0        | 0.0  | 0.0  | 640.0  | 0.0          | 0.0  |  |  |
| 9                | 540.0  | 0.0  | 0.0  | 630.0        | 0.0  | 0.0  | 720.0  | 0.0          | 0.0  |  |  |
| 10               | 600.0  | 0.0  | 0.0  | 700.0        | 0.0  | 0.0  | 800.0  | 0.0          | 0.0  |  |  |
| 11               | 660.0  | 0.0  | 0.0  | 770.0        | 0.0  | 0.0  | 880.0  | 0.0          | 0.0  |  |  |
| 12               | 720.0  | 0.0  | 0.0  | 840.0        | 0.0  | 0.0  | 960.0  | 0.0          | 0.0  |  |  |
| 13               | 780.0  | 0.0  | 0.0  | 910.0        | 0.0  | 0.0  | 1040.0 | 0.0          | 0.0  |  |  |
| 14               | 840.0  | 0.0  | 0.0  | 980.0        | 0.0  | 0.0  | 1120.0 | 0.0          | 0.0  |  |  |
| 15               | 900.0  | 0.0  | 0.0  | 1050.0       | 0.0  | 0.0  | 1200.0 | 0.0          | 0.0  |  |  |
| 16               | 960.0  | 0.0  | 0.0  | 1120.0       | 0.0  | 0.0  | 1280.0 | 0.0          | 0.0  |  |  |
| 17               | 1020.0 | 0.0  | 0.0  | 1190.0       | 0.0  | 0.0  | 1360.0 | 0.0          | 0.0  |  |  |
| 18               | 1080.0 | 0.0  | 0.0  | 1260.0       | 0.0  | 0.0  | 1440.0 | 0.0          | 0.0  |  |  |
| 19               | 1140.0 | 0.0  | 0.0  | 1330.0       | 0.0  | 0.0  | 1520.0 | 0.0          | 0.0  |  |  |
| 20               | 1200.0 | 0.0  | 0.0  | 1400.0       | 0.0  | 0.0  | 1600.0 | 0.0          | 0.0  |  |  |
| 21               | 1260.0 | 0.0  | 0.0  | 1470.0       | 0.0  | 0.0  | 1680.0 | 0.0          | 0.0  |  |  |
| 22               | 1320.0 | 0.0  | 0.0  | 1540.0       | 0.0  | 0.0  | 1760.0 | 0.0          | 0.0  |  |  |
| 23               | 1380.0 | 0.0  | 0.0  | 1610.0       | 0.0  | 0.0  | 1840.0 | 0.0          | 0.0  |  |  |
| 24               | 1440.0 | 0.0  | 0.0  | 1680.0       | 0.0  | 0.0  | 1920.0 | 0.0          | 0.0  |  |  |
| 25               | 1500.0 | 0.0  | 0.0  | 1750.0       | 0.0  | 0.0  | 2000.0 | 0.0          | 0.0  |  |  |
| 26               | 1560.0 | 0.0  | 0.0  | 1820.0       | 0.0  | 0.0  | 2080.0 | 0.0          | 0.0  |  |  |
| 27               | 1620.0 | 0.0  | 0.0  | 1890.0       | 0.0  | 0.0  | 2160.0 | 0.0          | 0.0  |  |  |
| 28               | 1680.0 | 0.0  | 0.0  | 1960.0       | 0.0  | 0.0  | 2240.0 | 0.0          | 0.0  |  |  |
| 29               | 1740.0 | 0.0  | 0.0  | 2030.0       | 0.0  | 0.0  | 2320.0 | 0.0          | 0.0  |  |  |
| 30               | 1800.0 | 0.0  | 0.0  | 2100.0       | 0.0  | 0.0  | 2400.0 | 0.0          | 0.0  |  |  |
| 31               | 1860.0 | 0.0  | 0.0  | 2170.0       | 0.0  | 0.0  | 2480.0 | 0.0          | 0.0  |  |  |
| 32               | 1920.0 | 0.0  | 0.0  | 2240.0       | 0.0  | 0.0  | 2560.0 | 0.0          | 0.0  |  |  |
| 33               | 1980.0 | 0.0  | 0.0  | 2310.0       | 0.0  | 0.0  | 2640.0 | 0.0          | 0.0  |  |  |
| 34               | 2040.0 | 0.0  | 0.0  | 2380.0       | 0.0  | 0.0  | 2720.0 | 0.0          | 0.0  |  |  |
| 35               | 2100.0 | 0.0  | 0.0  | 2450.0       | 0.0  | 0.0  | 2800.0 | 0.0          | 0.0  |  |  |
| 36               | 2160.0 | 0.0  | 0.0  | 2520.0       | 0.0  | 0.0  | 2880.0 | 0.0          | 0.0  |  |  |
| 37               | 2220.0 | 0.0  | 0.0  | 2590.0       | 0.0  | 0.0  | 2960.0 | 0.0          | 0.0  |  |  |
| 38               | 2280.0 | 0.0  | 0.0  | 2660.0       | 0.0  | 0.0  | 3040.0 | 0.0          | 0.0  |  |  |
| 39               | 2340.0 | 0.0  | 0.0  | 2730.0       | 0.0  | 0.0  | 3120.0 | 0.0          | 0.0  |  |  |
| 40               | 2400.0 | 0.0  | 0.0  | 2800.0       | 0.0  | 0.0  | 3200.0 | 0.0          | 0.0  |  |  |
| OASPL            |        | 55.3 | 34.5 |              | 72.1 | 51.0 |        | 77.3         | 60.6 |  |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 7 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |              |       |      |              |       |      |  |
|------------------|--------|-------|------|--------------|-------|------|--------------|-------|------|--|
| FNC-10 / 182     |        |       |      | FNC-11 / 183 |       |      | FNC-12 / 184 |       |      |  |
| HN               | F      | SPL   | SPLA | F            | SPL   | SPLA | F            | SPL   | SPLA |  |
| 1                | 60.0   | 103.4 | 77.2 | 70.0         | 111.8 | 85.6 | 80.0         | 115.2 | 92.7 |  |
| 2                | 120.0  | 94.8  | 78.7 | 140.0        | 99.5  | 83.4 | 160.0        | 108.7 | 95.3 |  |
| 3                | 180.0  | 84.2  | 73.3 | 210.0        | 91.5  | 80.6 | 240.0        | 102.4 | 93.8 |  |
| 4                | 240.0  | 73.8  | 65.2 | 280.0        | 76.2  | 67.6 | 320.0        | 95.9  | 89.3 |  |
| 5                | 300.0  | 69.7  | 63.1 | 350.0        | 0.0   | 0.0  | 400.0        | 89.7  | 84.9 |  |
| 6                | 360.0  | 0.0   | 0.0  | 420.0        | 0.0   | 0.0  | 480.0        | 74.6  | 71.4 |  |
| 7                | 420.0  | 0.0   | 0.0  | 490.0        | 0.0   | 0.0  | 560.0        | 0.0   | 0.0  |  |
| 8                | 480.0  | 0.0   | 0.0  | 560.0        | 0.0   | 0.0  | 640.0        | 0.0   | 0.0  |  |
| 9                | 540.0  | 0.0   | 0.0  | 630.0        | 0.0   | 0.0  | 720.0        | 0.0   | 0.0  |  |
| 10               | 600.0  | 0.0   | 0.0  | 700.0        | 0.0   | 0.0  | 800.0        | 0.0   | 0.0  |  |
| 11               | 660.0  | 0.0   | 0.0  | 770.0        | 0.0   | 0.0  | 880.0        | 0.0   | 0.0  |  |
| 12               | 720.0  | 0.0   | 0.0  | 840.0        | 0.0   | 0.0  | 960.0        | 0.0   | 0.0  |  |
| 13               | 780.0  | 0.0   | 0.0  | 910.0        | 0.0   | 0.0  | 1040.0       | 0.0   | 0.0  |  |
| 14               | 840.0  | 0.0   | 0.0  | 980.0        | 0.0   | 0.0  | 1120.0       | 0.0   | 0.0  |  |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0       | 0.0   | 0.0  | 1200.0       | 0.0   | 0.0  |  |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0       | 0.0   | 0.0  | 1280.0       | 0.0   | 0.0  |  |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0       | 0.0   | 0.0  | 1360.0       | 0.0   | 0.0  |  |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0       | 0.0   | 0.0  | 1440.0       | 0.0   | 0.0  |  |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0       | 0.0   | 0.0  | 1520.0       | 0.0   | 0.0  |  |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0       | 0.0   | 0.0  | 1600.0       | 0.0   | 0.0  |  |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0       | 0.0   | 0.0  | 1680.0       | 0.0   | 0.0  |  |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0       | 0.0   | 0.0  | 1760.0       | 0.0   | 0.0  |  |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0       | 0.0   | 0.0  | 1840.0       | 0.0   | 0.0  |  |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0       | 0.0   | 0.0  | 1920.0       | 0.0   | 0.0  |  |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0       | 0.0   | 0.0  | 2000.0       | 0.0   | 0.0  |  |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0       | 0.0   | 0.0  | 2080.0       | 0.0   | 0.0  |  |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0       | 0.0   | 0.0  | 2160.0       | 0.0   | 0.0  |  |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0       | 0.0   | 0.0  | 2240.0       | 0.0   | 0.0  |  |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0       | 0.0   | 0.0  | 2320.0       | 0.0   | 0.0  |  |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0       | 0.0   | 0.0  | 2400.0       | 0.0   | 0.0  |  |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0       | 0.0   | 0.0  | 2480.0       | 0.0   | 0.0  |  |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0       | 0.0   | 0.0  | 2560.0       | 0.0   | 0.0  |  |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0       | 0.0   | 0.0  | 2640.0       | 0.0   | 0.0  |  |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0       | 0.0   | 0.0  | 2720.0       | 0.0   | 0.0  |  |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0       | 0.0   | 0.0  | 2800.0       | 0.0   | 0.0  |  |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0       | 0.0   | 0.0  | 2880.0       | 0.0   | 0.0  |  |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0       | 0.0   | 0.0  | 2960.0       | 0.0   | 0.0  |  |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0       | 0.0   | 0.0  | 3040.0       | 0.0   | 0.0  |  |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0       | 0.0   | 0.0  | 3120.0       | 0.0   | 0.0  |  |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0       | 0.0   | 0.0  | 3200.0       | 0.0   | 0.0  |  |
| OASPL            |        | 104.0 | 81.8 | 112.1        |       | 88.5 | 116.3        |       | 99.5 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 9 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |              |       |       |        |              |       |       |       |
|------------------|--------|-------|------|--------------|-------|-------|--------|--------------|-------|-------|-------|
| FNC-10 / 182     |        |       |      | FNC-11 / 183 |       |       |        | FNC-12 / 184 |       |       |       |
| HN               | F      | SPL   | SPLA | F            | SPL   | SPLA  | F      | SPL          | SPLA  |       |       |
| 1                | 60.0   | 107.1 | 80.9 | 70.0         | 109.5 | 83.3  | 80.0   | 114.6        | 92.1  |       |       |
| 2                | 120.0  | 99.4  | 83.3 | 140.0        | 105.4 | 89.3  | 160.0  | 110.3        | 96.9  |       |       |
| 3                | 180.0  | 90.9  | 80.0 | 210.0        | 97.0  | 86.1  | 240.0  | 108.3        | 99.7  |       |       |
| 4                | 240.0  | 77.8  | 69.2 | 280.0        | 99.9  | 91.3  | 320.0  | 108.7        | 102.1 |       |       |
| 5                | 300.0  | 79.7  | 73.1 | 350.0        | 94.3  | 87.7  | 400.0  | 102.3        | 97.5  |       |       |
| 6                | 360.0  | 70.4  | 65.6 | 420.0        | 84.6  | 79.8  | 480.0  | 100.9        | 97.7  |       |       |
| 7                | 420.0  | 0.0   | 0.0  | 490.0        | 80.9  | 77.7  | 560.0  | 100.7        | 97.5  |       |       |
| 8                | 480.0  | 0.0   | 0.0  | 560.0        | 80.8  | 77.6  | 640.0  | 96.3         | 94.4  |       |       |
| 9                | 540.0  | 0.0   | 0.0  | 630.0        | 77.7  | 75.8  | 720.0  | 94.2         | 93.4  |       |       |
| 10               | 600.0  | 0.0   | 0.0  | 700.0        | 72.9  | 71.0  | 800.0  | 93.6         | 92.8  |       |       |
| 11               | 660.0  | 0.0   | 0.0  | 770.0        | 68.2  | 67.4  | 880.0  | 87.8         | 87.0  |       |       |
| 12               | 720.0  | 0.0   | 0.0  | 840.0        | 0.0   | 0.0   | 960.0  | 85.9         | 85.9  |       |       |
| 13               | 780.0  | 0.0   | 0.0  | 910.0        | 0.0   | 0.0   | 1040.0 | 87.6         | 87.6  |       |       |
| 14               | 840.0  | 0.0   | 0.0  | 980.0        | 0.0   | 0.0   | 1120.0 | 86.4         | 86.4  |       |       |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0       | 0.0   | 0.0   | 1200.0 | 76.2         | 76.8  |       |       |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0       | 0.0   | 0.0   | 1280.0 | 0.0          | 0.0   |       |       |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0       | 0.0   | 0.0   | 1360.0 | 0.0          | 0.0   |       |       |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0       | 0.0   | 0.0   | 1440.0 | 0.0          | 0.0   |       |       |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0       | 0.0   | 0.0   | 1520.0 | 0.0          | 0.0   |       |       |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0       | 0.0   | 0.0   | 1600.0 | 0.0          | 0.0   |       |       |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0       | 0.0   | 0.0   | 1680.0 | 0.0          | 0.0   |       |       |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0       | 0.0   | 0.0   | 1760.0 | 0.0          | 0.0   |       |       |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0       | 0.0   | 0.0   | 1840.0 | 0.0          | 0.0   |       |       |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0       | 0.0   | 0.0   | 1920.0 | 0.0          | 0.0   |       |       |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0       | 0.0   | 0.0   | 2000.0 | 0.0          | 0.0   |       |       |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0       | 0.0   | 0.0   | 2080.0 | 0.0          | 0.0   |       |       |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0       | 0.0   | 0.0   | 2160.0 | 0.0          | 0.0   |       |       |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0       | 0.0   | 0.0   | 2240.0 | 0.0          | 0.0   |       |       |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0       | 0.0   | 0.0   | 2320.0 | 0.0          | 0.0   |       |       |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0       | 0.0   | 0.0   | 2400.0 | 0.0          | 0.0   |       |       |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0       | 0.0   | 0.0   | 2480.0 | 0.0          | 0.0   |       |       |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0       | 0.0   | 0.0   | 2560.0 | 0.0          | 0.0   |       |       |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0       | 0.0   | 0.0   | 2640.0 | 0.0          | 0.0   |       |       |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0       | 0.0   | 0.0   | 2720.0 | 0.0          | 0.0   |       |       |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0       | 0.0   | 0.0   | 2800.0 | 0.0          | 0.0   |       |       |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0       | 0.0   | 0.0   | 2880.0 | 0.0          | 0.0   |       |       |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0       | 0.0   | 0.0   | 2960.0 | 0.0          | 0.0   |       |       |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0       | 0.0   | 0.0   | 3040.0 | 0.0          | 0.0   |       |       |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0       | 0.0   | 0.0   | 3120.0 | 0.0          | 0.0   |       |       |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0       | 0.0   | 0.0   | 3200.0 | 0.0          | 0.0   |       |       |
| OASPL            |        | 107.9 | 86.7 |              |       | 111.5 | 95.7   |              |       | 117.7 | 107.6 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 1 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |             |       |       |  |
|------------------|--------|-------|------|-------------|-------|------|-------------|-------|-------|--|
| FNC-1 / 176      |        |       |      | FNC-2 / 177 |       |      | FNC-3 / 178 |       |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F           | SPL   | SPLA  |  |
| 1                | 70.0   | 101.0 | 74.8 | 80.0        | 103.4 | 80.9 | 90.0        | 111.5 | 92.4  |  |
| 2                | 140.0  | 94.2  | 78.1 | 160.0       | 103.6 | 90.2 | 180.0       | 109.2 | 98.3  |  |
| 3                | 210.0  | 93.3  | 82.4 | 240.0       | 101.4 | 92.8 | 270.0       | 110.5 | 101.9 |  |
| 4                | 280.0  | 86.1  | 77.5 | 320.0       | 98.6  | 92.0 | 360.0       | 109.9 | 105.1 |  |
| 5                | 350.0  | 81.5  | 74.9 | 400.0       | 97.8  | 93.0 | 450.0       | 107.8 | 104.6 |  |
| 6                | 420.0  | 77.0  | 72.2 | 480.0       | 91.5  | 88.3 | 540.0       | 105.0 | 101.8 |  |
| 7                | 490.0  | 71.2  | 68.0 | 560.0       | 87.4  | 84.2 | 630.0       | 104.9 | 103.0 |  |
| 8                | 560.0  | 68.1  | 64.9 | 640.0       | 85.1  | 83.2 | 720.0       | 103.7 | 102.9 |  |
| 9                | 630.0  | 59.9  | 58.0 | 720.0       | 81.0  | 80.2 | 810.0       | 101.3 | 100.5 |  |
| 10               | 700.0  | 0.0   | 0.0  | 800.0       | 80.7  | 79.9 | 900.0       | 100.4 | 100.4 |  |
| 11               | 770.0  | 0.0   | 0.0  | 880.0       | 74.4  | 73.6 | 990.0       | 99.3  | 99.3  |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 71.2  | 71.2 | 1080.0      | 95.4  | 95.4  |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 70.2  | 70.2 | 1170.0      | 92.9  | 93.5  |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 61.8  | 61.8 | 1260.0      | 90.9  | 91.5  |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 57.9  | 58.5 | 1350.0      | 89.1  | 89.7  |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 0.0   | 0.0  | 1440.0      | 85.9  | 86.9  |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 0.0   | 0.0  | 1530.0      | 87.7  | 88.7  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 0.0   | 0.0  | 1620.0      | 83.8  | 84.8  |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 0.0   | 0.0  | 1710.0      | 79.2  | 80.2  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0  | 1800.0      | 80.8  | 82.0  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1890.0      | 77.5  | 78.7  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0  | 1980.0      | 74.5  | 75.7  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0  | 2070.0      | 70.7  | 71.9  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0  | 2160.0      | 68.2  | 69.4  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0  | 2250.0      | 70.4  | 71.7  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0  | 2340.0      | 63.2  | 64.5  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0  | 2430.0      | 0.0   | 0.0   |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0   |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0  | 2610.0      | 0.0   | 0.0   |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0  | 2700.0      | 0.0   | 0.0   |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0  | 2790.0      | 0.0   | 0.0   |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0  | 2970.0      | 0.0   | 0.0   |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0  | 3060.0      | 0.0   | 0.0   |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3150.0      | 0.0   | 0.0   |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0  | 3240.0      | 0.0   | 0.0   |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0  | 3330.0      | 0.0   | 0.0   |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0  | 3420.0      | 0.0   | 0.0   |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0  | 3510.0      | 0.0   | 0.0   |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0  | 3600.0      | 0.0   | 0.0   |  |
| OASPL            |        | 102.6 | 85.8 | 108.7       |       | 99.1 | 117.9       |       | 112.6 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA



# DNW PROPELLER NOISE TEST

MICROPHONE: MP 2 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |        |             |       |  |
|------------------|--------|-------|------|-------------|-------|-------|--------|-------------|-------|--|
| FNC-1 / 176      |        |       |      | FNC-2 / 177 |       |       |        | FNC-3 / 178 |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F      | SPL         | SPLA  |  |
| 1                | 70.0   | 105.7 | 79.5 | 80.0        | 108.5 | 86.0  | 90.0   | 112.7       | 93.6  |  |
| 2                | 140.0  | 101.3 | 85.2 | 160.0       | 108.8 | 95.4  | 180.0  | 117.1       | 106.2 |  |
| 3                | 210.0  | 98.1  | 87.2 | 240.0       | 106.0 | 97.4  | 270.0  | 114.3       | 105.7 |  |
| 4                | 280.0  | 93.9  | 85.3 | 320.0       | 102.3 | 95.7  | 360.0  | 111.5       | 106.7 |  |
| 5                | 350.0  | 88.7  | 82.1 | 400.0       | 101.1 | 96.3  | 450.0  | 114.9       | 111.7 |  |
| 6                | 420.0  | 85.9  | 81.1 | 480.0       | 101.6 | 98.4  | 540.0  | 114.8       | 111.6 |  |
| 7                | 490.0  | 82.1  | 78.9 | 560.0       | 98.1  | 94.9  | 630.0  | 111.6       | 109.7 |  |
| 8                | 560.0  | 79.1  | 75.9 | 640.0       | 94.6  | 92.7  | 720.0  | 109.6       | 108.8 |  |
| 9                | 630.0  | 72.8  | 70.9 | 720.0       | 90.8  | 90.0  | 810.0  | 109.8       | 109.0 |  |
| 10               | 700.0  | 65.2  | 63.3 | 800.0       | 89.8  | 89.0  | 900.0  | 110.4       | 110.4 |  |
| 11               | 770.0  | 59.5  | 58.7 | 880.0       | 88.2  | 87.4  | 990.0  | 107.0       | 107.0 |  |
| 12               | 840.0  | 57.7  | 56.9 | 960.0       | 84.5  | 84.5  | 1080.0 | 106.4       | 106.4 |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 81.0  | 81.0  | 1170.0 | 106.2       | 106.8 |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 78.0  | 78.0  | 1260.0 | 104.8       | 105.4 |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 76.0  | 76.6  | 1350.0 | 103.5       | 104.1 |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 73.4  | 74.0  | 1440.0 | 101.3       | 102.3 |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 69.7  | 70.3  | 1530.0 | 100.2       | 101.2 |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 67.5  | 68.5  | 1620.0 | 99.8        | 100.8 |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 65.9  | 66.9  | 1710.0 | 97.6        | 98.6  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 62.4  | 63.4  | 1800.0 | 95.8        | 97.0  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 60.2  | 61.2  | 1890.0 | 94.2        | 95.4  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 57.7  | 58.7  | 1980.0 | 94.5        | 95.7  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0 | 92.2        | 93.4  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0 | 90.5        | 91.7  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0 | 89.9        | 91.2  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0 | 88.9        | 90.2  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0 | 87.2        | 88.5  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0 | 86.1        | 87.4  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0 | 86.2        | 87.5  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0 | 85.0        | 86.3  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0 | 82.4        | 83.7  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0 | 81.9        | 83.1  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0 | 80.0        | 81.2  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0 | 81.2        | 82.4  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0 | 79.1        | 80.3  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0 | 76.9        | 78.1  |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0 | 74.8        | 76.0  |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0 | 77.3        | 78.5  |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0 | 75.6        | 76.8  |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0 | 72.1        | 73.1  |  |
| OASPL            |        | 107.8 | 92.3 |             | 113.9 | 105.1 |        | 123.8       | 120.2 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 3 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |        |             |       |       |       |
|------------------|--------|-------|------|-------------|-------|-------|--------|-------------|-------|-------|-------|
| FNC-1 / 176      |        |       |      | FNC-2 / 177 |       |       |        | FNC-3 / 178 |       |       |       |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F      | SPL         | SPLA  |       |       |
| 1                | 70.0   | 107.8 | 81.6 | 80.0        | 113.0 | 90.5  | 90.0   | 113.5       | 94.4  |       |       |
| 2                | 140.0  | 103.7 | 87.6 | 160.0       | 110.5 | 97.1  | 180.0  | 114.9       | 104.0 |       |       |
| 3                | 210.0  | 99.2  | 88.3 | 240.0       | 109.4 | 100.8 | 270.0  | 113.4       | 104.8 |       |       |
| 4                | 280.0  | 94.8  | 86.2 | 320.0       | 105.5 | 98.9  | 360.0  | 114.4       | 109.6 |       |       |
| 5                | 350.0  | 90.7  | 84.1 | 400.0       | 105.7 | 100.9 | 450.0  | 114.7       | 111.5 |       |       |
| 6                | 420.0  | 88.5  | 83.7 | 480.0       | 102.3 | 99.1  | 540.0  | 111.1       | 107.9 |       |       |
| 7                | 490.0  | 83.0  | 79.8 | 560.0       | 97.6  | 94.4  | 630.0  | 113.0       | 111.1 |       |       |
| 8                | 560.0  | 77.5  | 74.3 | 640.0       | 97.6  | 95.7  | 720.0  | 112.8       | 112.0 |       |       |
| 9                | 630.0  | 74.7  | 72.8 | 720.0       | 95.9  | 95.1  | 810.0  | 111.6       | 110.8 |       |       |
| 10               | 700.0  | 72.0  | 70.1 | 800.0       | 92.8  | 92.0  | 900.0  | 110.6       | 110.6 |       |       |
| 11               | 770.0  | 67.6  | 66.8 | 880.0       | 89.7  | 88.9  | 990.0  | 110.6       | 110.6 |       |       |
| 12               | 840.0  | 60.3  | 59.5 | 960.0       | 88.7  | 88.7  | 1080.0 | 108.5       | 108.5 |       |       |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 85.7  | 85.7  | 1170.0 | 106.1       | 106.7 |       |       |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 80.8  | 80.8  | 1260.0 | 107.4       | 108.0 |       |       |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 78.4  | 79.0  | 1350.0 | 105.7       | 106.3 |       |       |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 78.4  | 79.0  | 1440.0 | 103.3       | 104.3 |       |       |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 73.3  | 73.9  | 1530.0 | 102.4       | 103.4 |       |       |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 69.6  | 70.6  | 1620.0 | 103.2       | 104.2 |       |       |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 67.7  | 68.7  | 1710.0 | 100.9       | 101.9 |       |       |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 66.4  | 67.4  | 1800.0 | 97.3        | 98.5  |       |       |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 64.2  | 65.2  | 1890.0 | 97.6        | 98.8  |       |       |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 57.5  | 58.5  | 1980.0 | 97.6        | 98.8  |       |       |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0 | 95.0        | 96.2  |       |       |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0 | 93.5        | 94.7  |       |       |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0 | 94.5        | 95.8  |       |       |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0 | 91.7        | 93.0  |       |       |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0 | 89.4        | 90.7  |       |       |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0 | 90.3        | 91.6  |       |       |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0 | 89.6        | 90.9  |       |       |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0 | 87.4        | 88.7  |       |       |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0 | 86.2        | 87.5  |       |       |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0 | 86.4        | 87.6  |       |       |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0 | 86.2        | 87.4  |       |       |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0 | 84.9        | 86.1  |       |       |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0 | 81.8        | 83.0  |       |       |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0 | 81.6        | 82.8  |       |       |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0 | 82.6        | 83.8  |       |       |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0 | 80.9        | 82.1  |       |       |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0 | 78.2        | 79.4  |       |       |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0 | 78.6        | 79.6  |       |       |
| OASPL            |        | 109.9 | 93.9 |             |       | 117.1 | 107.8  |             |       | 124.0 | 121.3 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 4 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |        |             |       |  |
|------------------|--------|-------|------|-------------|-------|-------|--------|-------------|-------|--|
| FNC-1 / 176      |        |       |      | FNC-2 / 177 |       |       |        | FNC-3 / 178 |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F      | SPL         | SPLA  |  |
| 1                | 70.0   | 109.9 | 83.7 | 80.0        | 116.0 | 93.5  | 90.0   | 115.9       | 96.8  |  |
| 2                | 140.0  | 105.5 | 89.4 | 160.0       | 111.1 | 97.7  | 180.0  | 115.5       | 104.6 |  |
| 3                | 210.0  | 99.5  | 88.6 | 240.0       | 111.1 | 102.5 | 270.0  | 116.3       | 107.7 |  |
| 4                | 280.0  | 96.8  | 88.2 | 320.0       | 108.4 | 101.8 | 360.0  | 116.5       | 111.7 |  |
| 5                | 350.0  | 91.4  | 84.8 | 400.0       | 104.7 | 99.9  | 450.0  | 114.5       | 111.3 |  |
| 6                | 420.0  | 87.1  | 82.3 | 480.0       | 102.2 | 99.0  | 540.0  | 112.2       | 109.0 |  |
| 7                | 490.0  | 82.0  | 78.8 | 560.0       | 100.0 | 96.8  | 630.0  | 113.4       | 111.5 |  |
| 8                | 560.0  | 79.3  | 76.1 | 640.0       | 98.2  | 96.3  | 720.0  | 110.9       | 110.1 |  |
| 9                | 630.0  | 76.4  | 74.5 | 720.0       | 94.6  | 93.8  | 810.0  | 111.0       | 110.2 |  |
| 10               | 700.0  | 69.3  | 67.4 | 800.0       | 93.1  | 92.3  | 900.0  | 110.3       | 110.3 |  |
| 11               | 770.0  | 64.3  | 63.5 | 880.0       | 90.7  | 89.9  | 990.0  | 108.9       | 108.9 |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 86.5  | 86.5  | 1080.0 | 108.1       | 108.1 |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 84.9  | 84.9  | 1170.0 | 107.5       | 108.1 |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 83.4  | 83.4  | 1260.0 | 104.7       | 105.3 |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 79.4  | 80.0  | 1350.0 | 104.8       | 105.4 |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 74.4  | 75.0  | 1440.0 | 103.8       | 104.8 |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 74.1  | 74.7  | 1530.0 | 101.3       | 102.3 |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 71.7  | 72.7  | 1620.0 | 99.4        | 100.4 |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 68.4  | 69.4  | 1710.0 | 100.2       | 101.2 |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 64.7  | 65.7  | 1800.0 | 98.5        | 99.7  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 64.0  | 65.0  | 1890.0 | 94.9        | 96.1  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 62.2  | 63.2  | 1980.0 | 95.0        | 96.2  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0 | 94.0        | 95.2  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0 | 91.1        | 92.3  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0 | 90.9        | 92.2  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0 | 89.5        | 90.8  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0 | 88.4        | 89.7  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0 | 87.8        | 89.1  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0 | 87.3        | 88.6  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0 | 85.8        | 87.1  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0 | 85.2        | 86.5  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0 | 84.1        | 85.3  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0 | 82.5        | 83.7  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0 | 80.6        | 81.8  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0 | 81.7        | 82.9  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0 | 80.2        | 81.4  |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0 | 77.4        | 78.6  |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0 | 78.1        | 79.3  |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0 | 76.3        | 77.5  |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0 | 73.9        | 74.9  |  |
| OASPL            |        | 111.7 | 94.9 |             | 119.0 | 108.7 |        | 124.7       | 121.1 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 5 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |        |             |       |  |  |
|------------------|--------|-------|------|-------------|-------|-------|--------|-------------|-------|--|--|
| FNC-1 / 176      |        |       |      | FNC-2 / 177 |       |       |        | FNC-3 / 178 |       |  |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F      | SPL         | SPLA  |  |  |
| 1                | 70.0   | 111.2 | 85.0 | 80.0        | 118.3 | 95.8  | 90.0   | 118.2       | 99.1  |  |  |
| 2                | 140.0  | 106.7 | 90.6 | 160.0       | 112.3 | 98.9  | 180.0  | 110.7       | 99.8  |  |  |
| 3                | 210.0  | 97.2  | 86.3 | 240.0       | 109.6 | 101.0 | 270.0  | 117.1       | 108.5 |  |  |
| 4                | 280.0  | 96.8  | 88.2 | 320.0       | 111.1 | 104.5 | 360.0  | 118.3       | 113.5 |  |  |
| 5                | 350.0  | 93.1  | 86.5 | 400.0       | 105.6 | 100.8 | 450.0  | 109.2       | 106.0 |  |  |
| 6                | 420.0  | 85.2  | 80.4 | 480.0       | 98.6  | 95.4  | 540.0  | 111.6       | 108.4 |  |  |
| 7                | 490.0  | 79.3  | 76.1 | 560.0       | 99.5  | 96.3  | 630.0  | 112.2       | 110.3 |  |  |
| 8                | 560.0  | 77.1  | 73.9 | 640.0       | 97.1  | 95.2  | 720.0  | 107.3       | 106.5 |  |  |
| 9                | 630.0  | 73.8  | 71.9 | 720.0       | 92.7  | 91.9  | 810.0  | 107.4       | 106.6 |  |  |
| 10               | 700.0  | 67.7  | 65.8 | 800.0       | 88.4  | 87.6  | 900.0  | 106.6       | 106.6 |  |  |
| 11               | 770.0  | 60.2  | 59.4 | 880.0       | 86.5  | 85.7  | 990.0  | 105.9       | 105.9 |  |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 85.7  | 85.7  | 1080.0 | 103.8       | 103.8 |  |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 82.4  | 82.4  | 1170.0 | 102.9       | 103.5 |  |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 77.0  | 77.0  | 1260.0 | 102.6       | 103.2 |  |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 75.1  | 75.7  | 1350.0 | 99.1        | 99.7  |  |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 74.8  | 75.4  | 1440.0 | 98.4        | 99.4  |  |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 68.0  | 68.6  | 1530.0 | 96.7        | 97.7  |  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 66.6  | 67.6  | 1620.0 | 94.8        | 95.8  |  |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 67.6  | 68.6  | 1710.0 | 92.5        | 93.5  |  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 60.7  | 61.7  | 1800.0 | 92.8        | 94.0  |  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   | 1890.0 | 89.8        | 91.0  |  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0   | 1980.0 | 88.5        | 89.7  |  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0 | 89.0        | 90.2  |  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0 | 86.3        | 87.5  |  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0 | 83.3        | 84.6  |  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0 | 84.8        | 86.1  |  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0 | 78.5        | 79.8  |  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0 | 81.6        | 82.9  |  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0 | 73.3        | 74.6  |  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0 | 0.0         | 0.0   |  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0 | 0.0         | 0.0   |  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0 | 0.0         | 0.0   |  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0 | 0.0         | 0.0   |  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0 | 0.0         | 0.0   |  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0 | 0.0         | 0.0   |  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0 | 0.0         | 0.0   |  |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0 | 0.0         | 0.0   |  |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0 | 0.0         | 0.0   |  |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0 | 0.0         | 0.0   |  |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0 | 0.0         | 0.0   |  |  |
| OASPL            |        | 112.8 | 95.0 | 120.5       |       | 109.0 | 124.2  |             | 119.1 |  |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 6 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |             |       |       |  |
|------------------|--------|-------|------|-------------|-------|-------|-------------|-------|-------|--|
| FNC-1 / 176      |        |       |      | FNC-2 / 177 |       |       | FNC-3 / 178 |       |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F           | SPL   | SPLA  |  |
| 1                | 70.0   | 111.9 | 85.7 | 80.0        | 118.8 | 96.3  | 90.0        | 118.7 | 99.6  |  |
| 2                | 140.0  | 106.0 | 89.9 | 160.0       | 111.9 | 98.5  | 180.0       | 115.3 | 104.4 |  |
| 3                | 210.0  | 95.3  | 84.4 | 240.0       | 108.4 | 99.8  | 270.0       | 114.9 | 106.3 |  |
| 4                | 280.0  | 95.1  | 86.5 | 320.0       | 107.1 | 100.5 | 360.0       | 112.8 | 108.0 |  |
| 5                | 350.0  | 87.6  | 81.0 | 400.0       | 98.9  | 94.1  | 450.0       | 103.1 | 99.9  |  |
| 6                | 420.0  | 72.5  | 67.7 | 480.0       | 94.3  | 91.1  | 540.0       | 109.2 | 106.0 |  |
| 7                | 490.0  | 67.6  | 64.4 | 560.0       | 96.1  | 92.9  | 630.0       | 104.6 | 102.7 |  |
| 8                | 560.0  | 0.0   | 0.0  | 640.0       | 88.2  | 86.3  | 720.0       | 97.4  | 96.6  |  |
| 9                | 630.0  | 0.0   | 0.0  | 720.0       | 73.3  | 72.5  | 810.0       | 103.1 | 102.3 |  |
| 10               | 700.0  | 0.0   | 0.0  | 800.0       | 84.3  | 83.5  | 900.0       | 97.2  | 97.2  |  |
| 11               | 770.0  | 0.0   | 0.0  | 880.0       | 74.4  | 73.6  | 990.0       | 84.9  | 84.9  |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 0.0   | 0.0   | 1080.0      | 95.5  | 95.5  |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 0.0   | 0.0   | 1170.0      | 89.8  | 90.4  |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0   | 1260.0      | 90.0  | 90.6  |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 0.0   | 0.0   | 1350.0      | 86.3  | 86.9  |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 0.0   | 0.0   | 1440.0      | 81.9  | 82.9  |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 0.0   | 0.0   | 1530.0      | 78.3  | 79.3  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 0.0   | 0.0   | 1620.0      | 80.9  | 81.9  |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 0.0   | 0.0   | 1710.0      | 83.1  | 84.1  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0   | 1800.0      | 64.8  | 66.0  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   | 1890.0      | 0.0   | 0.0   |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0   | 1980.0      | 0.0   | 0.0   |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0      | 0.0   | 0.0   |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0      | 0.0   | 0.0   |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0      | 0.0   | 0.0   |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0      | 0.0   | 0.0   |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0      | 0.0   | 0.0   |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0      | 0.0   | 0.0   |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0      | 0.0   | 0.0   |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0      | 0.0   | 0.0   |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0      | 0.0   | 0.0   |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0      | 0.0   | 0.0   |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0      | 0.0   | 0.0   |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0      | 0.0   | 0.0   |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0      | 0.0   | 0.0   |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0      | 0.0   | 0.0   |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0      | 0.0   | 0.0   |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0      | 0.0   | 0.0   |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0      | 0.0   | 0.0   |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0      | 0.0   | 0.0   |  |
| OASPL            |        | 113.1 | 93.4 | 120.2       |       | 105.9 | 122.4       |       | 113.9 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 7 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |        |             |       |  |
|------------------|--------|-------|------|-------------|-------|------|--------|-------------|-------|--|
| FNC-1 / 176      |        |       |      | FNC-2 / 177 |       |      |        | FNC-3 / 178 |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F      | SPL         | SPLA  |  |
| 1                | 70.0   | 110.2 | 84.0 | 80.0        | 115.0 | 92.5 | 90.0   | 119.7       | 100.6 |  |
| 2                | 140.0  | 99.8  | 83.7 | 160.0       | 107.3 | 93.9 | 180.0  | 0.0         | 0.0   |  |
| 3                | 210.0  | 89.8  | 78.9 | 240.0       | 101.3 | 92.7 | 270.0  | 0.0         | 0.0   |  |
| 4                | 280.0  | 73.7  | 65.1 | 320.0       | 94.0  | 87.4 | 360.0  | 0.0         | 0.0   |  |
| 5                | 350.0  | 75.8  | 69.2 | 400.0       | 86.1  | 81.3 | 450.0  | 0.0         | 0.0   |  |
| 6                | 420.0  | 69.5  | 64.7 | 480.0       | 78.3  | 75.1 | 540.0  | 0.0         | 0.0   |  |
| 7                | 490.0  | 0.0   | 0.0  | 560.0       | 80.0  | 76.8 | 630.0  | 0.0         | 0.0   |  |
| 8                | 560.0  | 0.0   | 0.0  | 640.0       | 78.4  | 76.5 | 720.0  | 0.0         | 0.0   |  |
| 9                | 630.0  | 0.0   | 0.0  | 720.0       | 71.6  | 70.8 | 810.0  | 0.0         | 0.0   |  |
| 10               | 700.0  | 0.0   | 0.0  | 800.0       | 67.8  | 67.0 | 900.0  | 0.0         | 0.0   |  |
| 11               | 770.0  | 0.0   | 0.0  | 880.0       | 63.6  | 62.8 | 990.0  | 0.0         | 0.0   |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 0.0   | 0.0  | 1080.0 | 0.0         | 0.0   |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 0.0   | 0.0  | 1170.0 | 0.0         | 0.0   |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1260.0 | 0.0         | 0.0   |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 0.0   | 0.0  | 1350.0 | 0.0         | 0.0   |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 0.0   | 0.0  | 1440.0 | 0.0         | 0.0   |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 0.0   | 0.0  | 1530.0 | 0.0         | 0.0   |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 0.0   | 0.0  | 1620.0 | 0.0         | 0.0   |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 0.0   | 0.0  | 1710.0 | 0.0         | 0.0   |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0  | 1800.0 | 0.0         | 0.0   |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1890.0 | 0.0         | 0.0   |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0  | 1980.0 | 0.0         | 0.0   |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0  | 2070.0 | 0.0         | 0.0   |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0  | 2160.0 | 0.0         | 0.0   |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0  | 2250.0 | 0.0         | 0.0   |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0  | 2340.0 | 0.0         | 0.0   |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0  | 2430.0 | 0.0         | 0.0   |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2520.0 | 0.0         | 0.0   |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0  | 2610.0 | 0.0         | 0.0   |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0  | 2700.0 | 0.0         | 0.0   |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0  | 2790.0 | 0.0         | 0.0   |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0  | 2880.0 | 0.0         | 0.0   |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0  | 2970.0 | 0.0         | 0.0   |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0  | 3060.0 | 0.0         | 0.0   |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3150.0 | 0.0         | 0.0   |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0  | 3240.0 | 0.0         | 0.0   |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0  | 3330.0 | 0.0         | 0.0   |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0  | 3420.0 | 0.0         | 0.0   |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0  | 3510.0 | 0.0         | 0.0   |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0  | 3600.0 | 0.0         | 0.0   |  |
| OASPL            |        | 110.6 | 87.6 | 115.9       |       | 98.4 | 119.7  |             | 100.6 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 9 ( PITCH ANGLE: 19.9 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |        |             |       |  |
|------------------|--------|-------|------|-------------|-------|-------|--------|-------------|-------|--|
| FNC-1 / 176      |        |       |      | FNC-2 / 177 |       |       |        | FNC-3 / 178 |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F      | SPL         | SPLA  |  |
| 1                | 70.0   | 107.6 | 81.4 | 80.0        | 115.0 | 92.5  | 90.0   | 115.4       | 96.3  |  |
| 2                | 140.0  | 105.0 | 88.9 | 160.0       | 110.2 | 96.8  | 180.0  | 110.1       | 99.2  |  |
| 3                | 210.0  | 95.2  | 84.3 | 240.0       | 108.5 | 99.9  | 270.0  | 116.9       | 108.3 |  |
| 4                | 280.0  | 98.2  | 89.6 | 320.0       | 108.5 | 101.9 | 360.0  | 113.6       | 108.8 |  |
| 5                | 350.0  | 93.6  | 87.0 | 400.0       | 102.5 | 97.7  | 450.0  | 111.6       | 108.4 |  |
| 6                | 420.0  | 83.7  | 78.9 | 480.0       | 100.8 | 97.6  | 540.0  | 114.2       | 111.0 |  |
| 7                | 490.0  | 80.6  | 77.4 | 560.0       | 101.3 | 98.1  | 630.0  | 110.6       | 108.7 |  |
| 8                | 560.0  | 80.0  | 76.8 | 640.0       | 96.9  | 95.0  | 720.0  | 110.6       | 109.8 |  |
| 9                | 630.0  | 74.7  | 72.8 | 720.0       | 92.0  | 91.2  | 810.0  | 111.3       | 110.5 |  |
| 10               | 700.0  | 67.0  | 65.1 | 800.0       | 93.3  | 92.5  | 900.0  | 106.4       | 106.4 |  |
| 11               | 770.0  | 0.0   | 0.0  | 880.0       | 88.9  | 88.1  | 990.0  | 107.5       | 107.5 |  |
| 12               | 840.0  | 0.0   | 0.0  | 960.0       | 84.4  | 84.4  | 1080.0 | 107.3       | 107.3 |  |
| 13               | 910.0  | 0.0   | 0.0  | 1040.0      | 85.9  | 85.9  | 1170.0 | 104.6       | 105.2 |  |
| 14               | 980.0  | 0.0   | 0.0  | 1120.0      | 76.0  | 76.0  | 1260.0 | 103.7       | 104.3 |  |
| 15               | 1050.0 | 0.0   | 0.0  | 1200.0      | 80.5  | 81.1  | 1350.0 | 103.8       | 104.4 |  |
| 16               | 1120.0 | 0.0   | 0.0  | 1280.0      | 75.6  | 76.2  | 1440.0 | 102.3       | 103.3 |  |
| 17               | 1190.0 | 0.0   | 0.0  | 1360.0      | 73.6  | 74.2  | 1530.0 | 98.2        | 99.2  |  |
| 18               | 1260.0 | 0.0   | 0.0  | 1440.0      | 72.9  | 73.9  | 1620.0 | 99.9        | 100.9 |  |
| 19               | 1330.0 | 0.0   | 0.0  | 1520.0      | 67.2  | 68.2  | 1710.0 | 97.1        | 98.1  |  |
| 20               | 1400.0 | 0.0   | 0.0  | 1600.0      | 61.3  | 62.3  | 1800.0 | 95.7        | 96.9  |  |
| 21               | 1470.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   | 1890.0 | 96.6        | 97.8  |  |
| 22               | 1540.0 | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0   | 1980.0 | 92.6        | 93.8  |  |
| 23               | 1610.0 | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   | 2070.0 | 93.1        | 94.3  |  |
| 24               | 1680.0 | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   | 2160.0 | 93.8        | 95.0  |  |
| 25               | 1750.0 | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   | 2250.0 | 83.0        | 84.3  |  |
| 26               | 1820.0 | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   | 2340.0 | 90.9        | 92.2  |  |
| 27               | 1890.0 | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   | 2430.0 | 88.0        | 89.3  |  |
| 28               | 1960.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2520.0 | 84.3        | 85.6  |  |
| 29               | 2030.0 | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   | 2610.0 | 87.0        | 88.3  |  |
| 30               | 2100.0 | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   | 2700.0 | 83.8        | 85.1  |  |
| 31               | 2170.0 | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   | 2790.0 | 83.7        | 85.0  |  |
| 32               | 2240.0 | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   | 2880.0 | 84.2        | 85.4  |  |
| 33               | 2310.0 | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   | 2970.0 | 81.4        | 82.6  |  |
| 34               | 2380.0 | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   | 3060.0 | 81.2        | 82.4  |  |
| 35               | 2450.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3150.0 | 80.3        | 81.5  |  |
| 36               | 2520.0 | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   | 3240.0 | 80.4        | 81.6  |  |
| 37               | 2590.0 | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   | 3330.0 | 74.1        | 75.3  |  |
| 38               | 2660.0 | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   | 3420.0 | 79.0        | 80.2  |  |
| 39               | 2730.0 | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   | 3510.0 | 77.7        | 78.9  |  |
| 40               | 2800.0 | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   | 3600.0 | 71.8        | 72.8  |  |
| OASPL            |        | 110.1 | 94.5 | 117.9       |       | 107.6 | 123.5  |             | 119.8 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 1 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |        |             |       |  |  |
|------------------|--------|-------|------|-------------|-------|------|--------|-------------|-------|--|--|
| FNC-4 / 175      |        |       |      | FNC-5 / 174 |       |      |        | FNC-6 / 173 |       |  |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F      | SPL         | SPLA  |  |  |
| 1                | 60.0   | 101.2 | 75.0 | 70.0        | 104.7 | 78.5 | 80.0   | 108.2       | 85.7  |  |  |
| 2                | 120.0  | 90.8  | 74.7 | 140.0       | 95.6  | 79.5 | 160.0  | 105.8       | 92.4  |  |  |
| 3                | 180.0  | 83.8  | 72.9 | 210.0       | 95.2  | 84.3 | 240.0  | 104.6       | 96.0  |  |  |
| 4                | 240.0  | 77.7  | 69.1 | 280.0       | 88.8  | 80.2 | 320.0  | 101.2       | 94.6  |  |  |
| 5                | 300.0  | 70.7  | 64.1 | 350.0       | 83.4  | 76.8 | 400.0  | 99.4        | 94.6  |  |  |
| 6                | 360.0  | 68.2  | 63.4 | 420.0       | 80.4  | 75.6 | 480.0  | 94.9        | 91.7  |  |  |
| 7                | 420.0  | 64.5  | 59.7 | 490.0       | 70.8  | 67.6 | 560.0  | 90.2        | 87.0  |  |  |
| 8                | 480.0  | 56.1  | 52.9 | 560.0       | 71.3  | 68.1 | 640.0  | 88.5        | 86.6  |  |  |
| 9                | 540.0  | 0.0   | 0.0  | 630.0       | 63.3  | 61.4 | 720.0  | 86.0        | 85.2  |  |  |
| 10               | 600.0  | 0.0   | 0.0  | 700.0       | 56.9  | 55.0 | 800.0  | 82.0        | 81.2  |  |  |
| 11               | 660.0  | 0.0   | 0.0  | 770.0       | 0.0   | 0.0  | 880.0  | 80.0        | 79.2  |  |  |
| 12               | 720.0  | 0.0   | 0.0  | 840.0       | 0.0   | 0.0  | 960.0  | 74.2        | 74.2  |  |  |
| 13               | 780.0  | 0.0   | 0.0  | 910.0       | 0.0   | 0.0  | 1040.0 | 72.8        | 72.8  |  |  |
| 14               | 840.0  | 0.0   | 0.0  | 980.0       | 0.0   | 0.0  | 1120.0 | 67.1        | 67.1  |  |  |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0      | 0.0   | 0.0  | 1200.0 | 63.0        | 63.6  |  |  |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1280.0 | 0.0         | 0.0   |  |  |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0      | 0.0   | 0.0  | 1360.0 | 0.0         | 0.0   |  |  |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0  | 1440.0 | 0.0         | 0.0   |  |  |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0      | 0.0   | 0.0  | 1520.0 | 0.0         | 0.0   |  |  |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0      | 0.0   | 0.0  | 1600.0 | 0.0         | 0.0   |  |  |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0      | 0.0   | 0.0  | 1680.0 | 0.0         | 0.0   |  |  |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0      | 0.0   | 0.0  | 1760.0 | 0.0         | 0.0   |  |  |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0      | 0.0   | 0.0  | 1840.0 | 0.0         | 0.0   |  |  |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1920.0 | 0.0         | 0.0   |  |  |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0      | 0.0   | 0.0  | 2000.0 | 0.0         | 0.0   |  |  |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0      | 0.0   | 0.0  | 2080.0 | 0.0         | 0.0   |  |  |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0  | 2160.0 | 0.0         | 0.0   |  |  |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0      | 0.0   | 0.0  | 2240.0 | 0.0         | 0.0   |  |  |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0      | 0.0   | 0.0  | 2320.0 | 0.0         | 0.0   |  |  |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0      | 0.0   | 0.0  | 2400.0 | 0.0         | 0.0   |  |  |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0      | 0.0   | 0.0  | 2480.0 | 0.0         | 0.0   |  |  |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2560.0 | 0.0         | 0.0   |  |  |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0      | 0.0   | 0.0  | 2640.0 | 0.0         | 0.0   |  |  |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0      | 0.0   | 0.0  | 2720.0 | 0.0         | 0.0   |  |  |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0      | 0.0   | 0.0  | 2800.0 | 0.0         | 0.0   |  |  |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0  | 2880.0 | 0.0         | 0.0   |  |  |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0      | 0.0   | 0.0  | 2960.0 | 0.0         | 0.0   |  |  |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0      | 0.0   | 0.0  | 3040.0 | 0.0         | 0.0   |  |  |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0      | 0.0   | 0.0  | 3120.0 | 0.0         | 0.0   |  |  |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3200.0 | 0.0         | 0.0   |  |  |
| OASPL            |        | 101.6 | 79.7 | 105.8       |       | 88.0 | 112.1  |             | 101.7 |  |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-<sup>-</sup> PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA



# DNW PROPELLER NOISE TEST

MICROPHONE: MP 2 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |        |             |       |  |
|------------------|--------|-------|------|-------------|-------|------|--------|-------------|-------|--|
| FNC-4 / 175      |        |       |      | FNC-5 / 174 |       |      |        | FNC-6 / 173 |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F      | SPL         | SPLA  |  |
| 1                | 60.0   | 103.4 | 77.2 | 70.0        | 108.6 | 82.4 | 80.0   | 110.7       | 88.2  |  |
| 2                | 120.0  | 98.8  | 82.7 | 140.0       | 104.2 | 88.1 | 160.0  | 111.3       | 97.9  |  |
| 3                | 180.0  | 92.6  | 81.7 | 210.0       | 100.5 | 89.6 | 240.0  | 107.9       | 99.3  |  |
| 4                | 240.0  | 86.1  | 77.5 | 280.0       | 96.6  | 88.0 | 320.0  | 104.4       | 97.8  |  |
| 5                | 300.0  | 77.9  | 71.3 | 350.0       | 91.7  | 85.1 | 400.0  | 103.5       | 98.7  |  |
| 6                | 360.0  | 63.8  | 59.0 | 420.0       | 87.6  | 82.8 | 480.0  | 103.4       | 100.2 |  |
| 7                | 420.0  | 0.0   | 0.0  | 490.0       | 84.5  | 81.3 | 560.0  | 99.8        | 96.6  |  |
| 8                | 480.0  | 0.0   | 0.0  | 560.0       | 78.4  | 75.2 | 640.0  | 97.3        | 95.4  |  |
| 9                | 540.0  | 0.0   | 0.0  | 630.0       | 75.0  | 73.1 | 720.0  | 93.8        | 93.0  |  |
| 10               | 600.0  | 0.0   | 0.0  | 700.0       | 64.4  | 62.5 | 800.0  | 92.6        | 91.8  |  |
| 11               | 660.0  | 0.0   | 0.0  | 770.0       | 66.3  | 65.5 | 880.0  | 91.6        | 90.8  |  |
| 12               | 720.0  | 0.0   | 0.0  | 840.0       | 61.4  | 60.6 | 960.0  | 87.4        | 87.4  |  |
| 13               | 780.0  | 0.0   | 0.0  | 910.0       | 0.0   | 0.0  | 1040.0 | 84.3        | 84.3  |  |
| 14               | 840.0  | 0.0   | 0.0  | 980.0       | 0.0   | 0.0  | 1120.0 | 82.0        | 82.0  |  |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0      | 0.0   | 0.0  | 1200.0 | 79.2        | 79.8  |  |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1280.0 | 77.6        | 78.2  |  |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0      | 0.0   | 0.0  | 1360.0 | 73.6        | 74.2  |  |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0  | 1440.0 | 69.7        | 70.7  |  |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0      | 0.0   | 0.0  | 1520.0 | 70.3        | 71.3  |  |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0      | 0.0   | 0.0  | 1600.0 | 65.8        | 66.8  |  |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0      | 0.0   | 0.0  | 1680.0 | 65.1        | 66.1  |  |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0      | 0.0   | 0.0  | 1760.0 | 57.3        | 58.3  |  |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0      | 0.0   | 0.0  | 1840.0 | 0.0         | 0.0   |  |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1920.0 | 0.0         | 0.0   |  |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0      | 0.0   | 0.0  | 2000.0 | 0.0         | 0.0   |  |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0      | 0.0   | 0.0  | 2080.0 | 0.0         | 0.0   |  |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0  | 2160.0 | 0.0         | 0.0   |  |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0      | 0.0   | 0.0  | 2240.0 | 0.0         | 0.0   |  |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0      | 0.0   | 0.0  | 2320.0 | 0.0         | 0.0   |  |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0      | 0.0   | 0.0  | 2400.0 | 0.0         | 0.0   |  |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0      | 0.0   | 0.0  | 2480.0 | 0.0         | 0.0   |  |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2560.0 | 0.0         | 0.0   |  |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0      | 0.0   | 0.0  | 2640.0 | 0.0         | 0.0   |  |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0      | 0.0   | 0.0  | 2720.0 | 0.0         | 0.0   |  |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0      | 0.0   | 0.0  | 2800.0 | 0.0         | 0.0   |  |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0  | 2880.0 | 0.0         | 0.0   |  |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0      | 0.0   | 0.0  | 2960.0 | 0.0         | 0.0   |  |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0      | 0.0   | 0.0  | 3040.0 | 0.0         | 0.0   |  |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0      | 0.0   | 0.0  | 3120.0 | 0.0         | 0.0   |  |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3200.0 | 0.0         | 0.0   |  |
| OASPL            |        | 105.0 | 86.6 | 110.7       |       | 94.9 | 116.1  |             | 107.3 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 3 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |        |             |       |       |       |
|------------------|--------|-------|------|-------------|-------|-------|--------|-------------|-------|-------|-------|
| FNC-4 / 175      |        |       |      | FNC-5 / 174 |       |       |        | FNC-6 / 173 |       |       |       |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F      | SPL         | SPLA  |       |       |
| 1                | 60.0   | 105.8 | 79.6 | 70.0        | 110.8 | 84.6  | 80.0   | 113.9       | 91.4  |       |       |
| 2                | 120.0  | 100.9 | 84.8 | 140.0       | 107.2 | 91.1  | 160.0  | 112.7       | 99.3  |       |       |
| 3                | 180.0  | 93.1  | 82.2 | 210.0       | 102.4 | 91.5  | 240.0  | 111.0       | 102.4 |       |       |
| 4                | 240.0  | 87.4  | 78.8 | 280.0       | 98.3  | 89.7  | 320.0  | 107.8       | 101.2 |       |       |
| 5                | 300.0  | 81.7  | 75.1 | 350.0       | 93.5  | 86.9  | 400.0  | 107.2       | 102.4 |       |       |
| 6                | 360.0  | 76.6  | 71.8 | 420.0       | 92.0  | 87.2  | 480.0  | 104.2       | 101.0 |       |       |
| 7                | 420.0  | 68.9  | 64.1 | 490.0       | 84.7  | 81.5  | 560.0  | 100.6       | 97.4  |       |       |
| 8                | 480.0  | 58.1  | 54.9 | 560.0       | 81.2  | 78.0  | 640.0  | 100.0       | 98.1  |       |       |
| 9                | 540.0  | 0.0   | 0.0  | 630.0       | 74.0  | 72.1  | 720.0  | 98.5        | 97.7  |       |       |
| 10               | 600.0  | 0.0   | 0.0  | 700.0       | 75.1  | 73.2  | 800.0  | 95.5        | 94.7  |       |       |
| 11               | 660.0  | 0.0   | 0.0  | 770.0       | 64.8  | 64.0  | 880.0  | 92.5        | 91.7  |       |       |
| 12               | 720.0  | 0.0   | 0.0  | 840.0       | 68.4  | 67.6  | 960.0  | 92.1        | 92.1  |       |       |
| 13               | 780.0  | 0.0   | 0.0  | 910.0       | 53.5  | 53.5  | 1040.0 | 89.0        | 89.0  |       |       |
| 14               | 840.0  | 0.0   | 0.0  | 980.0       | 0.0   | 0.0   | 1120.0 | 85.2        | 85.2  |       |       |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0      | 0.0   | 0.0   | 1200.0 | 82.9        | 83.5  |       |       |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0   | 1280.0 | 82.5        | 83.1  |       |       |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0      | 0.0   | 0.0   | 1360.0 | 77.7        | 78.3  |       |       |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0   | 1440.0 | 74.3        | 75.3  |       |       |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0      | 0.0   | 0.0   | 1520.0 | 72.0        | 73.0  |       |       |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0      | 0.0   | 0.0   | 1600.0 | 70.5        | 71.5  |       |       |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0      | 0.0   | 0.0   | 1680.0 | 68.2        | 69.2  |       |       |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0      | 0.0   | 0.0   | 1760.0 | 62.0        | 63.0  |       |       |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0      | 0.0   | 0.0   | 1840.0 | 0.0         | 0.0   |       |       |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   | 1920.0 | 0.0         | 0.0   |       |       |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0      | 0.0   | 0.0   | 2000.0 | 0.0         | 0.0   |       |       |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0      | 0.0   | 0.0   | 2080.0 | 0.0         | 0.0   |       |       |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0   | 2160.0 | 0.0         | 0.0   |       |       |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0      | 0.0   | 0.0   | 2240.0 | 0.0         | 0.0   |       |       |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0      | 0.0   | 0.0   | 2320.0 | 0.0         | 0.0   |       |       |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0      | 0.0   | 0.0   | 2400.0 | 0.0         | 0.0   |       |       |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0      | 0.0   | 0.0   | 2480.0 | 0.0         | 0.0   |       |       |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2560.0 | 0.0         | 0.0   |       |       |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0      | 0.0   | 0.0   | 2640.0 | 0.0         | 0.0   |       |       |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0      | 0.0   | 0.0   | 2720.0 | 0.0         | 0.0   |       |       |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0      | 0.0   | 0.0   | 2800.0 | 0.0         | 0.0   |       |       |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0   | 2880.0 | 0.0         | 0.0   |       |       |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0      | 0.0   | 0.0   | 2960.0 | 0.0         | 0.0   |       |       |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0      | 0.0   | 0.0   | 3040.0 | 0.0         | 0.0   |       |       |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0      | 0.0   | 0.0   | 3120.0 | 0.0         | 0.0   |       |       |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3200.0 | 0.0         | 0.0   |       |       |
| OASPL            |        | 107.3 | 88.3 |             |       | 113.1 | 97.1   |             |       | 118.6 | 109.8 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 4 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |        |             |       |  |
|------------------|--------|-------|------|-------------|-------|------|--------|-------------|-------|--|
| FNC-4 / 175      |        |       |      | FNC-5 / 174 |       |      |        | FNC-6 / 173 |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F      | SPL         | SPLA  |  |
| 1                | 60.0   | 107.2 | 81.0 | 70.0        | 112.5 | 86.3 | 80.0   | 116.8       | 94.3  |  |
| 2                | 120.0  | 101.9 | 85.8 | 140.0       | 108.8 | 92.7 | 160.0  | 112.9       | 99.5  |  |
| 3                | 180.0  | 93.3  | 82.4 | 210.0       | 102.7 | 91.8 | 240.0  | 112.5       | 103.9 |  |
| 4                | 240.0  | 87.1  | 78.5 | 280.0       | 100.2 | 91.6 | 320.0  | 111.1       | 104.5 |  |
| 5                | 300.0  | 80.3  | 73.7 | 350.0       | 95.0  | 88.4 | 400.0  | 106.7       | 101.9 |  |
| 6                | 360.0  | 72.6  | 67.8 | 420.0       | 89.3  | 84.5 | 480.0  | 104.0       | 100.8 |  |
| 7                | 420.0  | 71.5  | 66.7 | 490.0       | 85.9  | 82.7 | 560.0  | 102.2       | 99.0  |  |
| 8                | 480.0  | 63.7  | 60.5 | 560.0       | 79.7  | 76.5 | 640.0  | 100.1       | 98.2  |  |
| 9                | 540.0  | 59.3  | 56.1 | 630.0       | 78.6  | 76.7 | 720.0  | 97.4        | 96.6  |  |
| 10               | 600.0  | 0.0   | 0.0  | 700.0       | 73.1  | 71.2 | 800.0  | 95.1        | 94.3  |  |
| 11               | 660.0  | 0.0   | 0.0  | 770.0       | 69.8  | 69.0 | 880.0  | 92.7        | 91.9  |  |
| 12               | 720.0  | 0.0   | 0.0  | 840.0       | 61.6  | 60.8 | 960.0  | 89.4        | 89.4  |  |
| 13               | 780.0  | 0.0   | 0.0  | 910.0       | 0.0   | 0.0  | 1040.0 | 88.3        | 88.3  |  |
| 14               | 840.0  | 0.0   | 0.0  | 980.0       | 0.0   | 0.0  | 1120.0 | 86.8        | 86.8  |  |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0      | 0.0   | 0.0  | 1200.0 | 80.4        | 81.0  |  |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1280.0 | 78.4        | 79.0  |  |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0      | 0.0   | 0.0  | 1360.0 | 78.1        | 78.7  |  |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0  | 1440.0 | 74.5        | 75.5  |  |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0      | 0.0   | 0.0  | 1520.0 | 70.7        | 71.7  |  |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0      | 0.0   | 0.0  | 1600.0 | 68.2        | 69.2  |  |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0      | 0.0   | 0.0  | 1680.0 | 68.3        | 69.3  |  |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0      | 0.0   | 0.0  | 1760.0 | 63.2        | 64.2  |  |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0      | 0.0   | 0.0  | 1840.0 | 0.0         | 0.0   |  |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1920.0 | 0.0         | 0.0   |  |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0      | 0.0   | 0.0  | 2000.0 | 0.0         | 0.0   |  |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0      | 0.0   | 0.0  | 2080.0 | 0.0         | 0.0   |  |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0  | 2160.0 | 0.0         | 0.0   |  |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0      | 0.0   | 0.0  | 2240.0 | 0.0         | 0.0   |  |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0      | 0.0   | 0.0  | 2320.0 | 0.0         | 0.0   |  |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0      | 0.0   | 0.0  | 2400.0 | 0.0         | 0.0   |  |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0      | 0.0   | 0.0  | 2480.0 | 0.0         | 0.0   |  |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2560.0 | 0.0         | 0.0   |  |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0      | 0.0   | 0.0  | 2640.0 | 0.0         | 0.0   |  |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0      | 0.0   | 0.0  | 2720.0 | 0.0         | 0.0   |  |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0      | 0.0   | 0.0  | 2800.0 | 0.0         | 0.0   |  |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0  | 2880.0 | 0.0         | 0.0   |  |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0      | 0.0   | 0.0  | 2960.0 | 0.0         | 0.0   |  |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0      | 0.0   | 0.0  | 3040.0 | 0.0         | 0.0   |  |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0      | 0.0   | 0.0  | 3120.0 | 0.0         | 0.0   |  |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3200.0 | 0.0         | 0.0   |  |
| OASPL            |        | 108.5 | 89.0 | 114.6       |       | 98.1 | 120.4  |             | 110.7 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 5 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |             |       |       |  |
|------------------|--------|-------|------|-------------|-------|------|-------------|-------|-------|--|
| FNC-4 / 175      |        |       |      | FNC-5 / 174 |       |      | FNC-6 / 173 |       |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F           | SPL   | SPLA  |  |
| 1                | 60.0   | 108.5 | 82.3 | 70.0        | 114.4 | 88.2 | 80.0        | 119.5 | 97.0  |  |
| 2                | 120.0  | 103.4 | 87.3 | 140.0       | 110.4 | 94.3 | 160.0       | 114.3 | 100.9 |  |
| 3                | 180.0  | 93.1  | 82.2 | 210.0       | 101.2 | 90.3 | 240.0       | 112.0 | 103.4 |  |
| 4                | 240.0  | 83.7  | 75.1 | 280.0       | 100.7 | 92.1 | 320.0       | 113.4 | 106.8 |  |
| 5                | 300.0  | 80.5  | 73.9 | 350.0       | 97.3  | 90.7 | 400.0       | 107.2 | 102.4 |  |
| 6                | 360.0  | 72.8  | 68.0 | 420.0       | 90.2  | 85.4 | 480.0       | 100.6 | 97.4  |  |
| 7                | 420.0  | 60.6  | 55.8 | 490.0       | 80.2  | 77.0 | 560.0       | 101.9 | 98.7  |  |
| 8                | 480.0  | 0.0   | 0.0  | 560.0       | 81.4  | 78.2 | 640.0       | 99.6  | 97.7  |  |
| 9                | 540.0  | 0.0   | 0.0  | 630.0       | 74.7  | 72.8 | 720.0       | 94.2  | 93.4  |  |
| 10               | 600.0  | 0.0   | 0.0  | 700.0       | 65.8  | 63.9 | 800.0       | 91.2  | 90.4  |  |
| 11               | 660.0  | 0.0   | 0.0  | 770.0       | 68.2  | 67.4 | 880.0       | 88.8  | 88.0  |  |
| 12               | 720.0  | 0.0   | 0.0  | 840.0       | 54.9  | 54.1 | 960.0       | 88.4  | 88.4  |  |
| 13               | 780.0  | 0.0   | 0.0  | 910.0       | 0.0   | 0.0  | 1040.0      | 85.3  | 85.3  |  |
| 14               | 840.0  | 0.0   | 0.0  | 980.0       | 0.0   | 0.0  | 1120.0      | 80.0  | 80.0  |  |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0      | 0.0   | 0.0  | 1200.0      | 78.7  | 79.3  |  |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1280.0      | 77.3  | 77.9  |  |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0      | 0.0   | 0.0  | 1360.0      | 71.8  | 72.4  |  |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0  | 1440.0      | 69.5  | 70.5  |  |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0      | 0.0   | 0.0  | 1520.0      | 66.7  | 67.7  |  |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0      | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0   |  |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0      | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   |  |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0      | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0   |  |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0      | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   |  |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   |  |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0      | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   |  |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0      | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   |  |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   |  |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0      | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   |  |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0      | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   |  |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0      | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   |  |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0      | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   |  |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   |  |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0      | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   |  |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0      | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   |  |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0      | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   |  |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   |  |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0      | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   |  |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0      | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   |  |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0      | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   |  |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   |  |
| OASPL            |        | 109.8 | 89.7 | 116.2       |       | 98.9 | 122.1       |       | 111.1 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 6 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |        |             |       |  |
|------------------|--------|-------|------|-------------|-------|------|--------|-------------|-------|--|
| FNC-4 / 175      |        |       |      | FNC-5 / 174 |       |      |        | FNC-6 / 173 |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F      | SPL         | SPLA  |  |
| 1                | 60.0   | 108.2 | 82.0 | 70.0        | 115.5 | 89.3 | 80.0   | 120.6       | 98.1  |  |
| 2                | 120.0  | 102.9 | 86.8 | 140.0       | 109.4 | 93.3 | 160.0  | 113.9       | 100.5 |  |
| 3                | 180.0  | 90.9  | 80.0 | 210.0       | 99.9  | 89.0 | 240.0  | 111.0       | 102.4 |  |
| 4                | 240.0  | 80.1  | 71.5 | 280.0       | 99.6  | 91.0 | 320.0  | 110.1       | 103.5 |  |
| 5                | 300.0  | 79.1  | 72.5 | 350.0       | 92.0  | 85.4 | 400.0  | 101.7       | 96.9  |  |
| 6                | 360.0  | 66.5  | 61.7 | 420.0       | 79.4  | 74.6 | 480.0  | 97.4        | 94.2  |  |
| 7                | 420.0  | 0.0   | 0.0  | 490.0       | 76.3  | 73.1 | 560.0  | 98.9        | 95.7  |  |
| 8                | 480.0  | 0.0   | 0.0  | 560.0       | 78.4  | 75.2 | 640.0  | 91.9        | 90.0  |  |
| 9                | 540.0  | 0.0   | 0.0  | 630.0       | 71.9  | 70.0 | 720.0  | 80.1        | 79.3  |  |
| 10               | 600.0  | 0.0   | 0.0  | 700.0       | 57.2  | 55.3 | 800.0  | 87.6        | 86.8  |  |
| 11               | 660.0  | 0.0   | 0.0  | 770.0       | 0.0   | 0.0  | 880.0  | 81.2        | 80.4  |  |
| 12               | 720.0  | 0.0   | 0.0  | 840.0       | 0.0   | 0.0  | 960.0  | 75.9        | 75.9  |  |
| 13               | 780.0  | 0.0   | 0.0  | 910.0       | 0.0   | 0.0  | 1040.0 | 72.3        | 72.3  |  |
| 14               | 840.0  | 0.0   | 0.0  | 980.0       | 0.0   | 0.0  | 1120.0 | 0.0         | 0.0   |  |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0      | 0.0   | 0.0  | 1200.0 | 0.0         | 0.0   |  |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1280.0 | 0.0         | 0.0   |  |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0      | 0.0   | 0.0  | 1360.0 | 0.0         | 0.0   |  |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0  | 1440.0 | 0.0         | 0.0   |  |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0      | 0.0   | 0.0  | 1520.0 | 0.0         | 0.0   |  |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0      | 0.0   | 0.0  | 1600.0 | 0.0         | 0.0   |  |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0      | 0.0   | 0.0  | 1680.0 | 0.0         | 0.0   |  |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0      | 0.0   | 0.0  | 1760.0 | 0.0         | 0.0   |  |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0      | 0.0   | 0.0  | 1840.0 | 0.0         | 0.0   |  |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1920.0 | 0.0         | 0.0   |  |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0      | 0.0   | 0.0  | 2000.0 | 0.0         | 0.0   |  |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0      | 0.0   | 0.0  | 2080.0 | 0.0         | 0.0   |  |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0  | 2160.0 | 0.0         | 0.0   |  |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0      | 0.0   | 0.0  | 2240.0 | 0.0         | 0.0   |  |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0      | 0.0   | 0.0  | 2320.0 | 0.0         | 0.0   |  |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0      | 0.0   | 0.0  | 2400.0 | 0.0         | 0.0   |  |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0      | 0.0   | 0.0  | 2480.0 | 0.0         | 0.0   |  |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2560.0 | 0.0         | 0.0   |  |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0      | 0.0   | 0.0  | 2640.0 | 0.0         | 0.0   |  |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0      | 0.0   | 0.0  | 2720.0 | 0.0         | 0.0   |  |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0      | 0.0   | 0.0  | 2800.0 | 0.0         | 0.0   |  |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0  | 2880.0 | 0.0         | 0.0   |  |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0      | 0.0   | 0.0  | 2960.0 | 0.0         | 0.0   |  |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0      | 0.0   | 0.0  | 3040.0 | 0.0         | 0.0   |  |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0      | 0.0   | 0.0  | 3120.0 | 0.0         | 0.0   |  |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3200.0 | 0.0         | 0.0   |  |
| OASPL            |        | 109.4 | 88.9 | 116.7       |       | 97.4 | 122.2  |             | 108.5 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 7 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |             |       |       |        |             |      |       |       |
|------------------|--------|-------|------|-------------|-------|-------|--------|-------------|------|-------|-------|
| FNC-4 / 175      |        |       |      | FNC-5 / 174 |       |       |        | FNC-6 / 173 |      |       |       |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA  | F      | SPL         | SPLA |       |       |
| 1                | 60.0   | 106.1 | 79.9 | 70.0        | 114.1 | 87.9  | 80.0   | 116.8       | 94.3 |       |       |
| 2                | 120.0  | 96.3  | 80.2 | 140.0       | 102.9 | 86.8  | 160.0  | 109.7       | 96.3 |       |       |
| 3                | 180.0  | 83.1  | 72.2 | 210.0       | 93.8  | 82.9  | 240.0  | 101.7       | 93.1 |       |       |
| 4                | 240.0  | 63.8  | 55.2 | 280.0       | 81.1  | 72.5  | 320.0  | 96.4        | 89.8 |       |       |
| 5                | 300.0  | 0.0   | 0.0  | 350.0       | 0.0   | 0.0   | 400.0  | 90.1        | 85.3 |       |       |
| 6                | 360.0  | 0.0   | 0.0  | 420.0       | 0.0   | 0.0   | 480.0  | 82.1        | 78.9 |       |       |
| 7                | 420.0  | 0.0   | 0.0  | 490.0       | 0.0   | 0.0   | 560.0  | 0.0         | 0.0  |       |       |
| 8                | 480.0  | 0.0   | 0.0  | 560.0       | 0.0   | 0.0   | 640.0  | 0.0         | 0.0  |       |       |
| 9                | 540.0  | 0.0   | 0.0  | 630.0       | 0.0   | 0.0   | 720.0  | 0.0         | 0.0  |       |       |
| 10               | 600.0  | 0.0   | 0.0  | 700.0       | 0.0   | 0.0   | 800.0  | 0.0         | 0.0  |       |       |
| 11               | 660.0  | 0.0   | 0.0  | 770.0       | 0.0   | 0.0   | 880.0  | 0.0         | 0.0  |       |       |
| 12               | 720.0  | 0.0   | 0.0  | 840.0       | 0.0   | 0.0   | 960.0  | 0.0         | 0.0  |       |       |
| 13               | 780.0  | 0.0   | 0.0  | 910.0       | 0.0   | 0.0   | 1040.0 | 0.0         | 0.0  |       |       |
| 14               | 840.0  | 0.0   | 0.0  | 980.0       | 0.0   | 0.0   | 1120.0 | 0.0         | 0.0  |       |       |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0      | 0.0   | 0.0   | 1200.0 | 0.0         | 0.0  |       |       |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0   | 1280.0 | 0.0         | 0.0  |       |       |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0      | 0.0   | 0.0   | 1360.0 | 0.0         | 0.0  |       |       |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0   | 1440.0 | 0.0         | 0.0  |       |       |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0      | 0.0   | 0.0   | 1520.0 | 0.0         | 0.0  |       |       |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0      | 0.0   | 0.0   | 1600.0 | 0.0         | 0.0  |       |       |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0      | 0.0   | 0.0   | 1680.0 | 0.0         | 0.0  |       |       |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0      | 0.0   | 0.0   | 1760.0 | 0.0         | 0.0  |       |       |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0      | 0.0   | 0.0   | 1840.0 | 0.0         | 0.0  |       |       |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   | 1920.0 | 0.0         | 0.0  |       |       |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0      | 0.0   | 0.0   | 2000.0 | 0.0         | 0.0  |       |       |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0      | 0.0   | 0.0   | 2080.0 | 0.0         | 0.0  |       |       |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0   | 2160.0 | 0.0         | 0.0  |       |       |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0      | 0.0   | 0.0   | 2240.0 | 0.0         | 0.0  |       |       |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0      | 0.0   | 0.0   | 2320.0 | 0.0         | 0.0  |       |       |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0      | 0.0   | 0.0   | 2400.0 | 0.0         | 0.0  |       |       |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0      | 0.0   | 0.0   | 2480.0 | 0.0         | 0.0  |       |       |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   | 2560.0 | 0.0         | 0.0  |       |       |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0      | 0.0   | 0.0   | 2640.0 | 0.0         | 0.0  |       |       |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0      | 0.0   | 0.0   | 2720.0 | 0.0         | 0.0  |       |       |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0      | 0.0   | 0.0   | 2800.0 | 0.0         | 0.0  |       |       |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0   | 2880.0 | 0.0         | 0.0  |       |       |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0      | 0.0   | 0.0   | 2960.0 | 0.0         | 0.0  |       |       |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0      | 0.0   | 0.0   | 3040.0 | 0.0         | 0.0  |       |       |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0      | 0.0   | 0.0   | 3120.0 | 0.0         | 0.0  |       |       |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   | 3200.0 | 0.0         | 0.0  |       |       |
| OASPL            |        | 106.6 | 83.4 |             |       | 114.4 | 91.2   |             |      | 117.7 | 100.2 |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

# DNW PROPELLER NOISE TEST

MICROPHONE: MP 9 ( PITCH ANGLE: 23.7 DEG )

| DATA-POINT / RUN |        |       |      |             |       |      |             |       |       |  |
|------------------|--------|-------|------|-------------|-------|------|-------------|-------|-------|--|
| FNC-4 / 175      |        |       |      | FNC-5 / 174 |       |      | FNC-6 / 173 |       |       |  |
| HN               | F      | SPL   | SPLA | F           | SPL   | SPLA | F           | SPL   | SPLA  |  |
| 1                | 60.0   | 107.6 | 81.4 | 70.0        | 111.9 | 85.7 | 80.0        | 116.7 | 94.2  |  |
| 2                | 120.0  | 101.2 | 85.1 | 140.0       | 107.9 | 91.8 | 160.0       | 112.3 | 98.9  |  |
| 3                | 180.0  | 91.6  | 80.7 | 210.0       | 98.0  | 87.1 | 240.0       | 111.3 | 102.7 |  |
| 4                | 240.0  | 81.9  | 73.3 | 280.0       | 101.3 | 92.7 | 320.0       | 110.7 | 104.1 |  |
| 5                | 300.0  | 81.7  | 75.1 | 350.0       | 96.5  | 89.9 | 400.0       | 103.2 | 98.4  |  |
| 6                | 360.0  | 76.1  | 71.3 | 420.0       | 88.4  | 83.6 | 480.0       | 103.2 | 100.0 |  |
| 7                | 420.0  | 67.7  | 62.9 | 490.0       | 83.8  | 80.6 | 560.0       | 103.2 | 100.0 |  |
| 8                | 480.0  | 0.0   | 0.0  | 560.0       | 85.4  | 82.2 | 640.0       | 99.0  | 97.1  |  |
| 9                | 540.0  | 0.0   | 0.0  | 630.0       | 78.3  | 76.4 | 720.0       | 94.8  | 94.0  |  |
| 10               | 600.0  | 0.0   | 0.0  | 700.0       | 70.4  | 68.5 | 800.0       | 96.1  | 95.3  |  |
| 11               | 660.0  | 0.0   | 0.0  | 770.0       | 0.0   | 0.0  | 880.0       | 91.8  | 91.0  |  |
| 12               | 720.0  | 0.0   | 0.0  | 840.0       | 0.0   | 0.0  | 960.0       | 88.0  | 88.0  |  |
| 13               | 780.0  | 0.0   | 0.0  | 910.0       | 0.0   | 0.0  | 1040.0      | 89.3  | 89.3  |  |
| 14               | 840.0  | 0.0   | 0.0  | 980.0       | 0.0   | 0.0  | 1120.0      | 83.0  | 83.0  |  |
| 15               | 900.0  | 0.0   | 0.0  | 1050.0      | 0.0   | 0.0  | 1200.0      | 0.0   | 0.0   |  |
| 16               | 960.0  | 0.0   | 0.0  | 1120.0      | 0.0   | 0.0  | 1280.0      | 0.0   | 0.0   |  |
| 17               | 1020.0 | 0.0   | 0.0  | 1190.0      | 0.0   | 0.0  | 1360.0      | 0.0   | 0.0   |  |
| 18               | 1080.0 | 0.0   | 0.0  | 1260.0      | 0.0   | 0.0  | 1440.0      | 0.0   | 0.0   |  |
| 19               | 1140.0 | 0.0   | 0.0  | 1330.0      | 0.0   | 0.0  | 1520.0      | 0.0   | 0.0   |  |
| 20               | 1200.0 | 0.0   | 0.0  | 1400.0      | 0.0   | 0.0  | 1600.0      | 0.0   | 0.0   |  |
| 21               | 1260.0 | 0.0   | 0.0  | 1470.0      | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0   |  |
| 22               | 1320.0 | 0.0   | 0.0  | 1540.0      | 0.0   | 0.0  | 1760.0      | 0.0   | 0.0   |  |
| 23               | 1380.0 | 0.0   | 0.0  | 1610.0      | 0.0   | 0.0  | 1840.0      | 0.0   | 0.0   |  |
| 24               | 1440.0 | 0.0   | 0.0  | 1680.0      | 0.0   | 0.0  | 1920.0      | 0.0   | 0.0   |  |
| 25               | 1500.0 | 0.0   | 0.0  | 1750.0      | 0.0   | 0.0  | 2000.0      | 0.0   | 0.0   |  |
| 26               | 1560.0 | 0.0   | 0.0  | 1820.0      | 0.0   | 0.0  | 2080.0      | 0.0   | 0.0   |  |
| 27               | 1620.0 | 0.0   | 0.0  | 1890.0      | 0.0   | 0.0  | 2160.0      | 0.0   | 0.0   |  |
| 28               | 1680.0 | 0.0   | 0.0  | 1960.0      | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0   |  |
| 29               | 1740.0 | 0.0   | 0.0  | 2030.0      | 0.0   | 0.0  | 2320.0      | 0.0   | 0.0   |  |
| 30               | 1800.0 | 0.0   | 0.0  | 2100.0      | 0.0   | 0.0  | 2400.0      | 0.0   | 0.0   |  |
| 31               | 1860.0 | 0.0   | 0.0  | 2170.0      | 0.0   | 0.0  | 2480.0      | 0.0   | 0.0   |  |
| 32               | 1920.0 | 0.0   | 0.0  | 2240.0      | 0.0   | 0.0  | 2560.0      | 0.0   | 0.0   |  |
| 33               | 1980.0 | 0.0   | 0.0  | 2310.0      | 0.0   | 0.0  | 2640.0      | 0.0   | 0.0   |  |
| 34               | 2040.0 | 0.0   | 0.0  | 2380.0      | 0.0   | 0.0  | 2720.0      | 0.0   | 0.0   |  |
| 35               | 2100.0 | 0.0   | 0.0  | 2450.0      | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0   |  |
| 36               | 2160.0 | 0.0   | 0.0  | 2520.0      | 0.0   | 0.0  | 2880.0      | 0.0   | 0.0   |  |
| 37               | 2220.0 | 0.0   | 0.0  | 2590.0      | 0.0   | 0.0  | 2960.0      | 0.0   | 0.0   |  |
| 38               | 2280.0 | 0.0   | 0.0  | 2660.0      | 0.0   | 0.0  | 3040.0      | 0.0   | 0.0   |  |
| 39               | 2340.0 | 0.0   | 0.0  | 2730.0      | 0.0   | 0.0  | 3120.0      | 0.0   | 0.0   |  |
| 40               | 2400.0 | 0.0   | 0.0  | 2800.0      | 0.0   | 0.0  | 3200.0      | 0.0   | 0.0   |  |
| OASPL            |        | 108.6 | 88.1 |             | 113.9 | 97.7 |             | 119.9 | 109.8 |  |

F - FREQUENCY HZ

SPL - SOUND PRESSURE LEVEL DB RE 2E-5 PA

SPLA - A-WEIGHTED SOUND PRESSURE LEVEL DBA RE 2E-5 PA

## 7. Comments on Data Interpretation

In the preceeding chapters acoustic as-measured data are presented in terms of pressure-time histories and narrow-band spectra for all microphone positions MP 1 to MP 9\*.

As stated in the "Executive Report" to this Appendix all data have been analysed regardless of occasional microphone drop-outs or the occurrence of external pressure disturbances which may distort the propeller noise-signature completely.

To avoid erroneous data interpretation, the following list summarizes all those data-points (within the total test-program) which should be deleted with respect to the microphone position indicated:

### Microphone Position MP 3:

Delete analyses of Data Points   BC-4  
  BC-5.

### Microphone Position MP 6:

| Subprogram          | Delete analyses of Data Points                             |
|---------------------|--|
| Basic Program       | AN-1,2,3,4,5,7; BN-1,2,3,4,5,6,61,7<br>BC-1,2,3,4,5,6,61,7 |
| Temperature Effect  | HN-3;   IN-1,2,3;   JN-1,2,3; KN-1,2<br>HC-1,2; IC-1,2,3;  |
| Attitude Effect     | -  |
| Installation Effect | FNC-7,8,9,10,11,12   |

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\* MP 8 has only been analysed for data points within the "Attitude-effect" test-program.



In addition, noise data acquired at microphone position MP 7 should be interpreted with care for such data-points which combine low propeller rotational speeds with high tunnel flow-velocities. Respective data are often disturbed due to the effects of microphone vibration. In each of these cases the respective averaged pressure-time history and the corresponding level-spectrum should be inspected carefully. If both data representations do not exhibit any periodic behaviour the respective analysis should not be interpreted.

On top of the averaged pressure-time history plot the number of averages as well as the magnitude of "disturbance-pressure-amplitudes" (which have been detected and deleted within the analysed time-interval) are indicated, the latter by  $\Delta P$ . In case of completely distorted propeller noise signatures,  $\Delta P$  generally assumes values of 496% (referenced to the minimum peak-to-peak pressure amplitude within the total number of propeller revolutions analysed). If even higher disturbance amplitudes occur, respective data analyses are marked by  $\Delta P > ***$  and should be deleted. Lists of harmonic levels in this case often contain just one level-value for the fundamental frequency ( $HN=1$ ) which then however has no physical meaning.

Therefore, data interpretation should not be solely based on the listing of harmonic levels. In particular, if only one harmonic level at  $HN=1$  is listed, a careful inspection of the respective level-spectrum (as calculated from the averaged time-history) is necessary to ensure the physical relevance of this harmonic level.

END

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DTIC